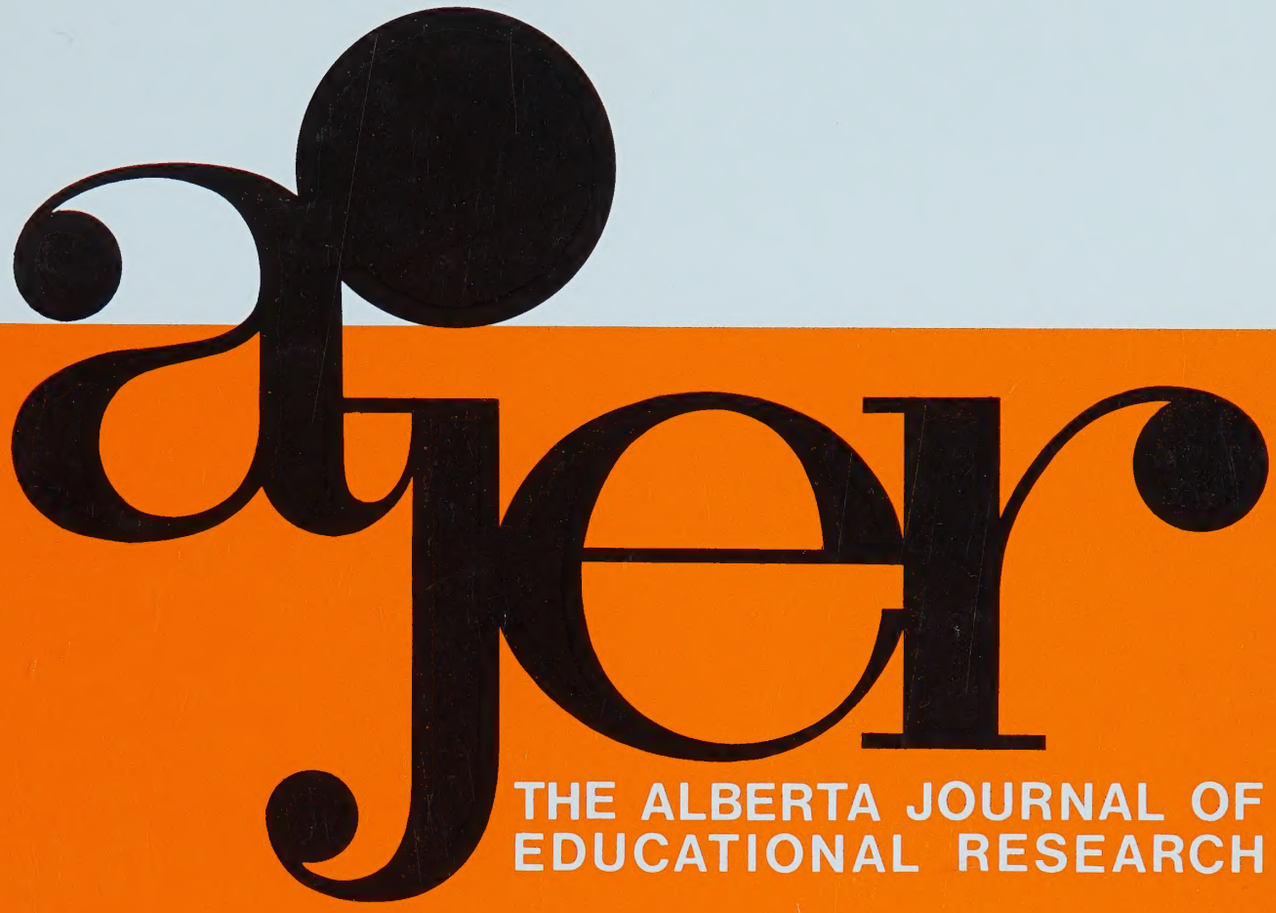

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THE EDITOR'S PAGE

Research Preparation of Graduate Students

The research preparation component of graduate programs in education has been a source of frustration and apprehension for generations of students. There are at least two reasons for the persistence of this phenomenon. One relates to the characteristics of the students; the other to the way the training institution treats them. In combination they generate a kind of self-fulfilling prophecy.

Most students begin graduate studies having had little experience in, or much regard for, research activity. Their undergraduate education was designed to equip them to begin teaching by developing a knowledge base and a set of skills that would aid survival in the classroom. They then engaged in professional practice for a few years and were conditioned to rely on the *folk wisdom* of their colleagues as a guide to action. Throughout their professional socialization the actual and potential contributions of research to educational practice were generally unrecognized, if not derided.

Usually, graduate studies is only a brief interlude or a part-time preoccupation. Enrolment occurs at a point when it is convenient or opportune in regard to their employment status and consonant with their personal life-style. There are often severe constraints on the time, energy, and money the students have to commit to the endeavor. What they perceive as placing the greatest strain on these resources is the thesis as well as the preparation associated with it.

The novices' skepticism and apprehension are reinforced soon after arriving on campus. Other students, sometimes to ease their own anxieties, regale them with horror stories, particularly about the course work in statistics. They encounter persons who are lingering on, long after most of their cohort has departed, because of their inability to get the thesis done. Staff members tell the newcomers that it is performance in the research courses that identifies the better students.

What staff do not tell students about these apparently crucial courses is that their content is largely dependent upon who teaches them. Few university departments have monitoring processes in place which enable them to know what is being taught and learned. Fewer still have a clear formulation of the scope and sequence of their research courses. Even fewer have policies which provide for the periodic renewal and rejuvenation of such courses. The result is a game of *research roulette* for graduate students which the vast majority will *win* by getting passing grades. However, what many students *lose* is the opportunity to gain an understanding of the various research strategies in the field of study and to develop the ability to plan and conduct research of significance.

Admittedly, in a field of study as diverse as education and involving a creative activity like research, it is difficult to generalize and dangerous to prescribe. Yet surely, somewhere, there is someone who can develop a rationale and devise a research preparation component for graduate students which will imbue them with the spirit of discovery, allay their anxieties, and endow them with the capacity to advance knowledge. Perhaps that someone is you. Why not put your ideas in an article for the perspectives section of this journal?

W.H.W.

The Alberta Journal of Educational Research *Vol. XXXIII, No. 1, March 1987, 2-20*

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Individually Administered Intelligence Test Scores: Equivalent or Comparable?[1]

The validity of equating the Slosson Intelligence Test, the Peabody Picture Vocabulary Test, and the Standard Progressive Matrices to the WISC-R was assessed in terms of psychological and statistical criteria. All four tests were administered to common, deeply stratified random samples of 7½-, 9½- and 11½-year-old students. Pairs of tests judged to be psychologically equivalent and whose disattenuated correlation coefficient exceeded .70 were equated using linear and hand and computerized equipercentile methods. The different methods were equally sensitive to the relaxed definition of parallelism; the mean conditional-root-mean-square errors of equating equaled approximately 11 IQ points. It was, therefore, concluded that the equating proposed was not valid. Instead, comparable score distributions were realized for the age populations from which the samples were drawn.

In 1922, E.L. Thorndike pointed out that the development of increasing numbers of intelligence tests necessitated a means for transmitting "a score obtained with one test into the score that is equivalent to it in some other test" (Thorndike, 1922, p. 29). More recently, Lennon (1966) claimed that "it is generally agreed that there is need for data that will permit conversion of scores or IQs derived from one test to [equivalent] measures derived from other tests" (p. 198). The rationale for the call for equivalent score conversions is based on the desirability of establishing an empirical means for making comparisons among individuals or groups using common-purpose test scores from different test sources.

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It has been suggested that one fallacy in the interpretation of intelligence tests is that comparisons of this nature are often made on what may be an erroneous assumption of direct score correspondence between tests which are seen as psychologically equivalent. The basic misunderstanding underlying this practice has been termed the "jingle fallacy": Tests which bear the same name measure the same thing. This has fostered the notion that there is a common and therefore constant conceptual meaning in the numerical representation of IQ (Anastasi, 1976; Ebel, 1972, 1976; Newland, 1973). Despite the fact that it has been repeatedly pointed out that direct score equivalence does not exist from test to test (Anastasi, 1976; Cronbach, 1970; Salvia & Ysseldyke, 1978; Sattler, 1974), there can be little doubt from a practitioner's point of view that IQ scores from various tests of intelligence are used interchangeably for educational purposes (Barratt, 1956; Birkemeyer, 1964; Ritter, Duffey, & Fischman, 1973).

Functional equivalence alone, however, is based on simple face validity of tests having a common name and claim of purpose. Such evidence provides inadequate justification for treating tests as equivalent or interchangeable. Psychological and statistical criteria need to be added. The present study was directed toward this issue. Specifically, the question examined was whether it was feasible to establish the type of score conversions advocated by Thorndike (1922) and Lennon (1966) for individually administered intelligence tests. Four tests regularly used in schools were considered: the Wechsler Intelligence Scale for Children—Revised (WISC-R, Wechsler, 1974), the Slosson Intelligence Test (SIT, Slosson, 1975), the Peabody Picture Vocabulary Test (PPVT, Dunn, 1965) and the Standard Progressive Matrices (SPM, Raven, 1960).

Equivalent and Comparable Scores

Pertinent to the resolution of the issue of equivalent scores is the distinction made between equivalent score conversions and comparable score conversions. Although more readily interpreted, the development of equivalent scores is somewhat more problematic than the development of comparable scores. Thus, in light of the controversy surrounding the interchangeability of the intelligence tests, both equating and comparing were examined in terms of their technical requirements and their applicability in the present study.

Equivalent Scores

The technical feasibility of equating is determined by the parallelism of the tests involved. According to Angoff,

> equating, or the derivation of equivalent scores, concerns itself with the problem of unique conversions which may be derived only across test forms that are parallel, that is forms that measure, within acceptable limits, the same psychological function. (1971, p. 563)

Unfortunately, Angoff did not clarify the meaning of "within acceptable limits." Ideally, parallelism is defined in the restricted mathematical sense of classical true score theory (see Lord and Novick, 1968, p. 48). Gulliksen (1950) outlined two criteria for parallel tests, one statistical and the other psychological:

> In addition to equal means, variances, and reliabilities, parallel tests should have approximately equal validities for any criterion . . . The tests should contain items dealing with the same subject matter, items of the same format, etc. In other words, the tests should be parallel as far as psychological judgment is concerned. (pp. 173-174)

Wesman (1958) pointed out that "these conditions are ordinarily most closely

approximated where parallel forms of a test have been constructed—forms which are intended to be interchangeable" (p. 8).

For practical purposes, however, equivalent score conversions may be desirable among tests which were not specifically constructed in this manner, but which are used for the same purpose (Wesman, 1958; Flanagan, 1964; Lennon, 1966; Marco, Petersen, & Stewart, 1979). Wesman (1958) called attention to the fact that

> Assumptions we can make with regard to content and reliability of parallel forms of one test are not readily acceptable when we are dealing with two somewhat different tests of the same general ability. This situation is one in which the problem of equivalence frequently arises. (p. 8)

Marco, Petersen, and Stewart described the strict psychometric requirements for equating as "ideal." They suggested that these may be unrealistic in actual testing practice and that "scores must sometimes be equated under less-than-optimum conditions" (p. 1). The Anchor Test Study provides an example. According to Jaeger (1973) "the major question to be explored was the technical feasibility of equating tests that were not designed to be parallel" (p. 3). In that study, the psychological criteria were evaluated by a panel of experts. They judged the tests to require many of the same skills and abilities, but with less than perfect overlap. The statistical criterion was interpreted solely in terms of intertest correlation coefficients. When corrected for attenuation, they were found to be uniformly high. "Of the 207 corrected intercorrelations obtained in the Anchor Test Study data . . . only 20 might be considered significantly below .95; all 20 were above .89" (Loret, Seder, Bianchini, & Vale, 1974, p. 8). The value of .95 is often taken as an arbitrary cutoff for the purposes of equating (Linn, 1975, p. 206).

Lord and Novick's (1968) notion of nominally parallel tests formalizes the relaxation of the statistical restrictions imposed on strictly parallel tests. They suggested that the term "does not imply any mathematically defined degree of parallelism in any particular respect" (p. 174). Nominally parallel tests are, rather, defined in terms of functional and psychological criteria. They are considered a "family" of different measurements, each of which measures "important aspects or manifestations of the psychological variable under study" (p. 174). In an earlier paper, Lord (1964) defined as nominally parallel "any set of test forms that are used interchangeably in common practice, even though they are not strictly parallel statistically" (p. 335).

Comparable Scores

Unlike the concept of equivalence, which is specific to the tests themselves and, as has been shown, is dependent upon parallelism, comparability refers solely to test score scales. Comparable scores can be achieved by scaling any tests in a common metric for a common reference group. The purpose of such common scaling is to assign the same numerical value to scores occupying the same rank in their respective distributions. This can be done irrespective of test content and carries no implication of the interchangeability of tests.

Angoff (1971) described comparing as follows: "[Comparing] may be thought of quite simply as the problem of 'equating' tests of different psychological function (p. 590). [The derivation of comparable scores involves] the problem of nonunique conversions of scores across nonparallel forms" (p. 563). As opposed to test equating, Angoff stressed the broader application of the concept of comparing (i.e., any two scales can be made comparable) and the narrower interpretation of the

converted scores. Since the score conversions are nonunique, they are not generalizable beyond the group on which they were established (Millman & Linlof, 1964). Lord (1950) pointed out that "comparability may be expected to hold approximately, however, with respect to groups sufficiently similar to the basic group. Obviously, the basic group should in general be a representative sample of persons of the type for whom the tests are intended" (p. 1).

The technical considerations in the establishment of comparable scores, therefore, are focused on the nature of the group used for establishing the conversions rather than on the nature of the tests themselves.

Equating Versus Comparing

The distinction between equating and comparing is blurred somewhat by the inconsistent use of these terms in the literature (see Lennon, 1966, for example) and the formalization of the notion of nominally parallel tests. A further note of clarification seems warranted. Equating and comparing are referred to as types of conversion, where a conversion is an empirical transformation of the score scale of one test so that it is related to the score scale of another test in some defined manner. When this transformation yields an equivalency relationship, the score values on the two tests have identical meaning in terms of the trait being measured. Thus equal score values represent a quantification of the same trait irrespective of the test used. When a comparable relationship is established between two tests, the same numerical score values correspond to equal standard scores and, in the case of similarly distributed scores, the same rank position within a specified group. This is a scale relationship only and carries no connotation regarding the equality of possession of the amount of the trait or traits being measured.

A clear example of the difference between the two, and one which exists within the context of this study, is as follows. The PPVT has two parallel forms: Form A and Form B. As such, it does not matter which form is used since they yield equivalent measures of receptive vocabulary. An individual would be expected to score similarly on both test forms. The WISC-R subtests, on the other hand, are comparable tests. Although each subtest involves a different type of task, they are all scaled from 1-19 with mean 10 and standard deviation 3. Thus a scaled score of 12 has a constant meaning in terms of rank across all subtests (that is, a percentile rank of 75). However, for any individual, the scores may be expected to vary considerably from one subtest to another.

Comparability can be seen as the generic relationship, which accounts for much of the intermingling of the terms in the literature. A common definition of comparability is that the distributions of scores on two tests have been made identical for a given group (Angoff, 1971; Flanagan, 1951; Lord, 1950). This applies to equivalent as well as to comparable tests (although the restricted reference group notion is not necessary for equivalent forms). Thus equivalent scores share the characteristics of comparable scores. Equivalence, however, is a specific case of comparability which is limited by the additional requirements of parallelism of the two tests. What is not yet clear is the extent to which the concept of equivalence extends to cover nominally parallel tests as described by Lord and Novick (1968, p. 174).

The major question addressed in the present study concerned the validity of equating the SIT, PPVT, and SPM to the WISC-R. In this study, the WISC-R served as a reference test. The WISC-R, like its predecessor the WISC, shares

status among individual intelligence tests with the Stanford-Binet as one of the "stately, revered, and venerated devices against which all other tests [are] measured" (Bersoff, 1980, p. 113). Reviewers acclaimed the WISC-R as an "even more valuable tool than its highly praised and well-used predecessor" (Krichev, 1978, p. 335) and "the instrument of choice for the psychological assessment of children's intelligence" (Whitworth, 1978, p. 351). However, it is time-consuming to administer and its use is restricted to persons who have undergone extensive training in administration and interpretation. The combination of its accepted validity and its obvious cost has, since its inception, precipitated "a continual search for a test of mental ability which would produce comparable results" (Covin, 1977, p. 259). The SIT, PPVT, and SPM have been considered major contenders for the role of short-test alternate. But is it valid to apply equating in this situation where, as suggested earlier, it could not be expected that the tests would strictly satisfy the classical criteria for parallelism?

Methods, Results, and Discussion

The validity of equating the SIT, PPVT, and SPM to the WISC-R was examined at three sequentially related stages. First, the criterion of psychological equivalence was assessed. Technical criteria were then applied to the test pairs identified as psychologically equivalent. Finally, linear and equipercentile equating methods were applied to the test pairs which satisfied both sets of criteria.

Psychological Equivalence

In the context of the present study, psychological equivalence was defined as similarity of the psychological trait or function measured. The hypothetical constructs underlying the tests insofar as they are reflected in the statements of their respective authors and in the content and format of the tests themselves were compared. In addition, the results of correlational and factor analytic studies reported in the literature were examined for evidence of intertest similarities.

Space limitations preclude presenting the vast array of information and data considered in this analysis. Instead, presented here is a summary of the findings (see Holmes, 1981, for detailed findings).

Table 1 contains a brief description of the content and factorial structures of the four tests. As shown, three types of measures defined in terms of the verbal, nonverbal, and general IQ scales of the WISC-R were used. The tests judged to be psychologically similar to the reference scales are indicated in Table 2. The appearance of C, A, or V marks the basis for identification: C—content; A—author's statements of purpose; and V—results from empirical validity studies. The coincidence of two or more of these similarity factors suggested strong evidence for the psychological equivalence of test pairs. This is visually represented by the solid line enclosures in the body of the table. Test pairs having weaker evidence of psychological equivalence are illustrated with a broken-line enclosure.

Functionally equivalent test pairs are also represented in Table 2 by the letter F. It is obvious from this illustration that evidence for the psychological equivalence of the test pairs considered in this study does not generally substantiate the functional equivalence which is implied in their common use.

TABLE 1

Content and Structure of the Tests

Test	Type of Measure		
	Verbal	Nonverbal	General
WISC-R	Yields Verbal IQ score—supported by factor analytic studies	Yields Performance IQ score—supported by factor analytic studies	Yields Full Scale IQ score which combines Verbal and Performance Constitutes a measure of *g*
SIT	Verbal format. Similar to S-B which has high verbal factor		Item diversity suggests a more general measure
PPVT	Strictly verbal		
SPM	Some suggestion of verbal components	Overtly nonverbal. Considered as such by Raven	Considered a measure of *g* by some

TABLE 2

Psychologically and Functionally Equivalent Test Pairs as Suggested by their Content (C), Authors' Claim (A), Empirical Validity (V), and Practitioners' Use (F)

	WISC-R		
	Verbal	Performance	Full Scale
SIT	C,V		A,C,V,F
PPVT	A,C,V		F
SPM		A,C,V	V,F

Technical Equivalence

Subjects

The population identified for the second and third stages of the study consisted of all non-Native, English-speaking children at three age levels—7½, 9½, and 11½ years—attending public and independent schools in the province of British Columbia, Canada. The population was further restricted to exclude students enrolled in classes for the physically handicapped, emotionally disturbed, and the trainable mentally retarded.

A two-stage stratified proportional sample design was used to select a probability sample at each age level. At stage one, the target sample size of 180 students was allocated proportionally to cells defined by geographic region, community size, and size of school. Since it was considered desirable to assess one student per school at each age level, the allocated sizes determined the number of schools to be

selected from each cell. The schools within a cell were ranked by their estimated enrollment at age 7½ and divided into *n* substrata, *n* the sample allocation for the cell. To ensure representation of small schools (there were many rural schools with one to three students per age), similar size schools with enrollments less than 2*n* and within close geographic proximity were amalgamated and treated as one. Schools were then selected within substrata proportional to their estimated size at age 7½. Where possible, the same school was used for ages 9½ and 11½. In cases where the allocated sample size was larger at ages 9½ and 11½, or where the age 7½ school contained only primary (K-3) grades, the sampling procedure was repeated at the other age levels for the particular cell in question.

At stage two, students were randomly chosen from the sampled schools. Ages were defined within three months of the midyear; thus 7½ years spanned a six-month range from seven years three months to seven years nine months. Ages 9½ and 11½ were similarly defined. Equal numbers of boys and girls were assigned to each cell when the sample size for that cell was even. When cell sample size was odd, the sex of the "odd" person was determined randomly and the female-male quota of the next adjacent cell (within region) was structured to balance the numbers.

Procedure

Test materials. The SIT, PPVT, and SPM (Sets A, B, C, D, and E) were administered without change. On the WISC-R, six items in the Information subtest and one item in the Comprehension subtest were reworded to "Canadianize" United States-specific content. The rewordings adopted were recommended by Vernon (1974, 1976, 1977) on the basis that their use with Canadian children yielded subtest pass percentages similar to those for the American standardization sample. As well, only 10 WISC-R subtests were given: Mazes and Digit Span were not administered.

Test administration. In all cases, the WISC-R was administered by "level C" testers (Cronbach, 1970, p. 18). Generally, the same person administered all tests to a given student. In some situations, the non-WISC-R tests were administered by a learning assistance teacher or a first-year graduate student in school psychology trained to "level B" (Cronbach, 1970, p. 18) testing competence. Two testing sessions were used. The WISC-R was administered in the first session followed by the remaining tests, in six counterbalanced orders, in the second.

Test scoring. To ensure consistency, all tests were scored following the directions given in the respective manuals. Second party verification of a 10% random sample of tests revealed a .57% error rate for the WISC-R. For all other tests, the error rate was zero percent. The test scores were coded and keypunched with 100% verification.

Demographic Description of Final Samples

The actual number of students tested together with the number of usable tests were, respectively, 115 and 99 at age 7½, 117 and 108 at 9½, and 108 and 104 at 11½. Part of the nonresponse was attributable to nonparticipation by 26 of the selected schools; the remainder was due to the failure to obtain parental permission which was necessary for test administration. WISC-R scores were obtained for each child tested. For a few students, however, scores were not available on the remaining three tests. For some of these children, testing was not completed because of

absenteeism. For the remaining, test protocols were considered unscorable due to errors in administration.

Table 3 contains descriptions of the final sample for each age group in terms of the sampling stratification variables and a socio-educational variable. As shown, the relative proportions of children tested in each geographic region corresponded closely to the population proportions. The Metro and Kootenay regions were slightly overrepresented while the Okanagan and Fraser Valley regions were somewhat underrepresented. There was a slight sample bias toward schools located in large urban rather than rural areas. This is in keeping with the inflated representation of the Metro region. Any trend toward the disproportionate inclusion of large units which might be suspected from the data to this point, however, is disproved by the distribution for class size. More of the children tested were enrolled in small schools than was expected from the target sample allocation based on these population percentages. This proportion is attributed to the testing of more children in small schools in the Metro region than anticipated.

The percentages shown in Table 3 for level of education of head of household were derived for the entire province. Often used as a stratification variable, it was not possible to use this variable during sample selection. Thus classification according to level of education was requested from parents after the sample had been drawn. As shown, a much larger than expected percentage reported the highest level of schooling completed to be senior secondary (grades 11 to 13).

In summary, although the obtained sample sizes were less than the target size on which the allocations were based, the samples were dispersed in basically the same relative proportions in the population for all stratification variables.

Technical Suitability of Test Pairs

The technical suitability of the test pairs identified as psychologically equivalent was examined in terms of the reliability of the tests and the correlation between tests. As well, the characteristics of the score distributions were examined to determine the appropriate method of conversions to use. Since order of test administration was nonsignificant (analyses of variance yielded results consistent with chance, $p<.25$), these initial analyses and the subsequent score conversions were based on the total sample for each test.

Characteristics of score distributions. The means and standard deviations are reported in Table 4 for each test at each age level. One sample statistical test revealed that, in general, the means were significantly higher and the variances lower ($p<.05$) than the corresponding values published in the respective test manuals (Holmes, 1981). The Kolmogorov-Smirnov one-sample goodness of fit test (Siegel, 1956) indicated that, for each test, the hypothesis of normally distributed scores was tenable ($p<.20$). These findings suggested that since the score distributions were essentially the same, the results of linear equating should closely approximate the results of equipercentile equating (Angoff, 1971, p. 564).

Reliability

Table 5 contains the internal consistency and disattenuated correlation coefficients for the test pairs identified as psychologically equivalent (Table 2). The internal consistency coefficients were computed following the procedures outlined in the WISC-R Manual (Wechsler, 1974, pp. 27-28). Split-half correlations corrected by the Spearman-Brown formula were used for all subtests with the exclusion of

TABLE 3

Representativeness of the Samples
Population and Sample Percentages

Demographic Variable	Age					
	7½ (n=99)		9½ (n=108)		11½ (n=104)	
	Pop.	Sam.	Pop.	Sam.	Pop.	Sam
Region						
Okanagan	14.9	13.0	15.1	12.8	14.6	12.0
Metro	38.4	41.7	38.2	40.2	35.9	38.9
Fraser Valley	11.2	7.8	11.0	8.6	11.6	9.3
Vancouver Island	17.3	16.5	17.3	18.8	17.6	17.6
Kootenay	5.9	7.8	5.9	7.8	7.0	8.3
Northern	12.3	13.0	12.5	12.0	13.2	13.9
Community Size						
<1000	16.9	13.0	17.0	14.8	16.6	13.0
1001-50,000	42.0	41.7	42.1	40.2	44.1	47.2
>50,000	41.1	45.2	40.9	45.3	39.4	39.8
School Size						
<150	12.6	14.7	10.9	14.5	8.7	12.0
151-300	29.2	27.8	29.1	26.5	27.4	26.8
>300	58.2	57.4	60.0	60.0	63.9	61.1
Gender						
Male	—[a]	52.2	—	46.2	—	52.8
Female	—	47.8	—	53.8	—	47.2
Education Level[b] Head of Household						
<Grade 9			13.3	10.5		
Grades 9 to 10			16.0	18.6		
Grades 11 to 13			27.0	38.0		
Post-Secondary,						
non-university			20.0	15.9		
university, college			23.6	17.0		

Note: The population percentages are based on 1976-1977 school enrollment data for region, community size, and on 1976 Census data for educational level of head of household.
[a]Not available
[b]Combined across three age levels, n=258.

TABLE 4

Means and Standard Deviations

Test	Age		
	7½	9½	11½
WISC-R			
Verbal	106.08	106.01	101.68
	13.79	12.46	12.69
Performance	109.92	108.86	107.68
	13.11	12.71	13.53
Full Scale	108.16	107.89	104.80
	12.35	12.76	12.88
SIT	114.95	112.52	109.48
	11.90	12.68	15.42
PPVT	106.53	112.71	110.49
	15.25	14.35	14.99
SPM	21.17	31.58	37.58
	7.24	8.06	6.54

Note: The mean is listed first, followed by the standard deviation.

coding. Guilford's (1954, p. 393) formula for computing the reliability of a composite group of tests was used to obtain reliability coefficients for the composite scores. The obtained values, which ranged from .78 to .93, were considered adequate for equating (Marks & Lindsay, 1972, p. 55). Of further interest was the size of the discrepancy between coefficients of tests to be equated. Angoff (1971) pointed out that to be equivalent, tests must be equally reliable (p. 568). However, in practice this condition is rarely met. Unfortunately there are no specific guidelines regarding the tolerance of equating procedures from exact equality of reliabilities. Application of statistical procedures to test the equality of reliabilities of two tests administered to the same sample depend upon the correlation between the tests. The nature of the dependency is such that the higher the intercorrelation, the more likely the null hypothesis will be rejected (see Feldt, 1980). Consequently, slight differences between the reliabilities of highly correlated (parallel) tests are found to be significant. Application of these statistical procedures appears to be too stringent a test. Marks and Lindsay (1972) found, using Monte Carlo procedures, that differences up to .20 did not significantly effect the results of equating nominally parallel tests. They pointed out, however, that this may be an artifact of the equating procedure they used (p. 54). In the present study, the maximum reliability difference is .14 (WISC-R Verbal: SIT, age 9½); the remaining differences are .10 or less. Within the range investigated by Marks and Lindsay, these differences were considered insufficient to warrant deletion of any of the test pairs for equating.

Intertest correlation. The intertest correlation coefficients, corrected for attenuation using the basic formula $_{c}r_{xy}=r_{xy}/(r_{xx}r_{yy})^{1/2}$ and reported in Table 5, ranged from .48 to .94. Other than general agreement that tests, to be equated, should correlate highly, there are no definitive guidelines for setting a minimum value. In the present study, a value of .70 was used to identify test pairs for equating. Somewhat

TABLE 5

Internal Consistency and Disattenuated Correlation Coefficients for Psychologically Equivalent Test Pairs

Test Pair	Age Level	Internal Consistency[a]	Disattenuated Correlation[b]
WISC-R Verbal: SIT	7½	.86, .78	.94*
	9½	.93, .79	.76*
	11½	.93, .88	.92*
WISC-R Verbal: PPVT	7½	.86, .88	.68*
	9½	.93, .87	.72*
	11½	.93, .87	.78*
WISC-R: Performance: SPM	7½	.88, .89	.50
	9½	.83, .92	.60
	11½	.82, .83	.68
WISC-R Full Scale: SIT	7½	.86, .78	.79*
	9½	.88, .79	.80*
	11½	.87, .88	.89*
WISC-R Full Scale: SPM	7½	.86, .89	.48
	9½	.88, .92	.58
	11½	.87, .83	.67

[a]WISC-R listed first
[b]*Selected for statistical equating

lower than the values observed in the Anchor Test Study, correlations of this magnitude are commonly found between WISC-R scores and scores on other tests of intelligence (Sattler, 1974; Wechsler, 1974). Eight of the test pairs shown in Table 5 were selected using this value: WISC-R, Verbal: SIT, all ages; WISC-R Full Scale: SIT, all ages; and WISC-R: Verbal: PPVT, ages 9½ and 11½. A ninth pair, WISC-R Verbal: PPVT, age 7½ was added, thereby completing the set for the WISC-R Verbal: PPVT. The correlational evidence was considered insufficient to warrant keeping any of the test pairs involving the SPM, even though they had been judged to be psychologically equivalent.

Equating

Procedure

Both linear and equipercentile methods were applied to the nine test pairs "eligible" for statistical equating. Both methods were considered since, although it could be assumed that both would yield nearly equal results given the similarity of shape of the test score distributions, it was not clear which, if either, of the methods would yield acceptable results in light of the relaxed technical criteria used.

WISC-R scores, linearly equivalent to an observed score on the SIT or PPVT, were computed using Lord's (1950) linear transformation form for equal standard scores:

$$Y^{*}_{it} = \frac{s_w}{s_t} Y_{it} + \bar{X}_{.w} - \frac{s_w}{s_t} \bar{Y}_{.t}$$

(p. 5)

where Y^*_{it} is the equivalent WISC-R score on scale w (w=Verbal, Full Scale) for person i with raw score Y_{it} on test t (t=SIT, PPVT), and $\bar{x}_{.w}$, $\bar{Y}_{.t}$, s_w, and s_t are the corresponding means and standard deviations of w and t. Equipercentile equating involved the identification of corresponding percentiles in the w and t distributions and the assignment of equivalence to their associated score values. Two procedures, handgraphing (Angoff, 1971, pp. 571-575; Flanagan, 1951, pp. 727-730) and computerized or analytical (Lindsay & Prichard, 1971), were used. The accuracy of each method was assessed in terms of the conditional root-mean-square error of equating:

$$RMS_{Y.X} = \sqrt{\frac{\sum_{1}^{n} (X_{iw} - Y^*_{it})^2}{n-1}}$$

where n is the sample size and x_{iw} is the observed score for person i on WISC-R scale w (cf Bianchini & Loret, 1974a, p. 160). Not to be confused with the standard error of equating (Angoff, 1971, p. 570), this error measure reflects the degree to which a WISC-R score read from an equating table produced for the SIT or PPVT differed, on average, from the actual WISC-R score obtained by an individual.

Results

The results yielded by the different equating procedures were similar both within and across the nine test pairs that were equated. In light of this agreement, the presentation of results is restricted to the detailed results for one test pair and a summary of the conditional root-mean-square errors.

Table 6 consists of a series of "equivalent" score values for the PPVT and WISC-R Verbal IQ at age 7½ which were produced by the different equating procedures. The scores used for equating were the renormed values for the British Columbia population (see Holmes, 1981, pp. 103-108). Thus the mean IQ reported for the PPVT in Table 6 is 100.00 rather than 106.53 as listed in Table 4. It will be noted that the converted IQ values are reported to two decimal places. Since the purpose of this part of the study was to examine the efficacy of equating procedures, it was desirable to retain precision to the second decimal point. In the preparation of equivalency tables for practitioners' use, however, these would be rounded to the nearest whole number (cf Loret et al., 1974).

In the first column the raw score values for the PPVT are listed. The obtained score range on this test was 70-137. The next column contains the results of linear equating. The results of the equipercentile equating procedures are shown in columns 3 to 6. The converted scores from the hand-graphing procedure are listed first (column 3), followed by the results from the computerized analytical program (columns 4-6). Column 4 shows the interpolated scores, and columns 5 and 6 the converted scores resulting from the linear and polynomial curve-fitting procedures (Lindsay & Prichard, 1971). Below the table, the conditional root-mean-square errors of equating are presented to aid in the interpretation of the results. The subscripts L, G, I, LC, and PC indicate the correspondence of these errors to the linear score, graphic, interpolated, linear curve-fitting, and polynomial curve-fitting columns respectively.

Linear equating. As shown in Table 6, column 2, the converted values for the linear score procedure ranged from 71.24 to 135.65. The actual obtained score range

TABLE 6

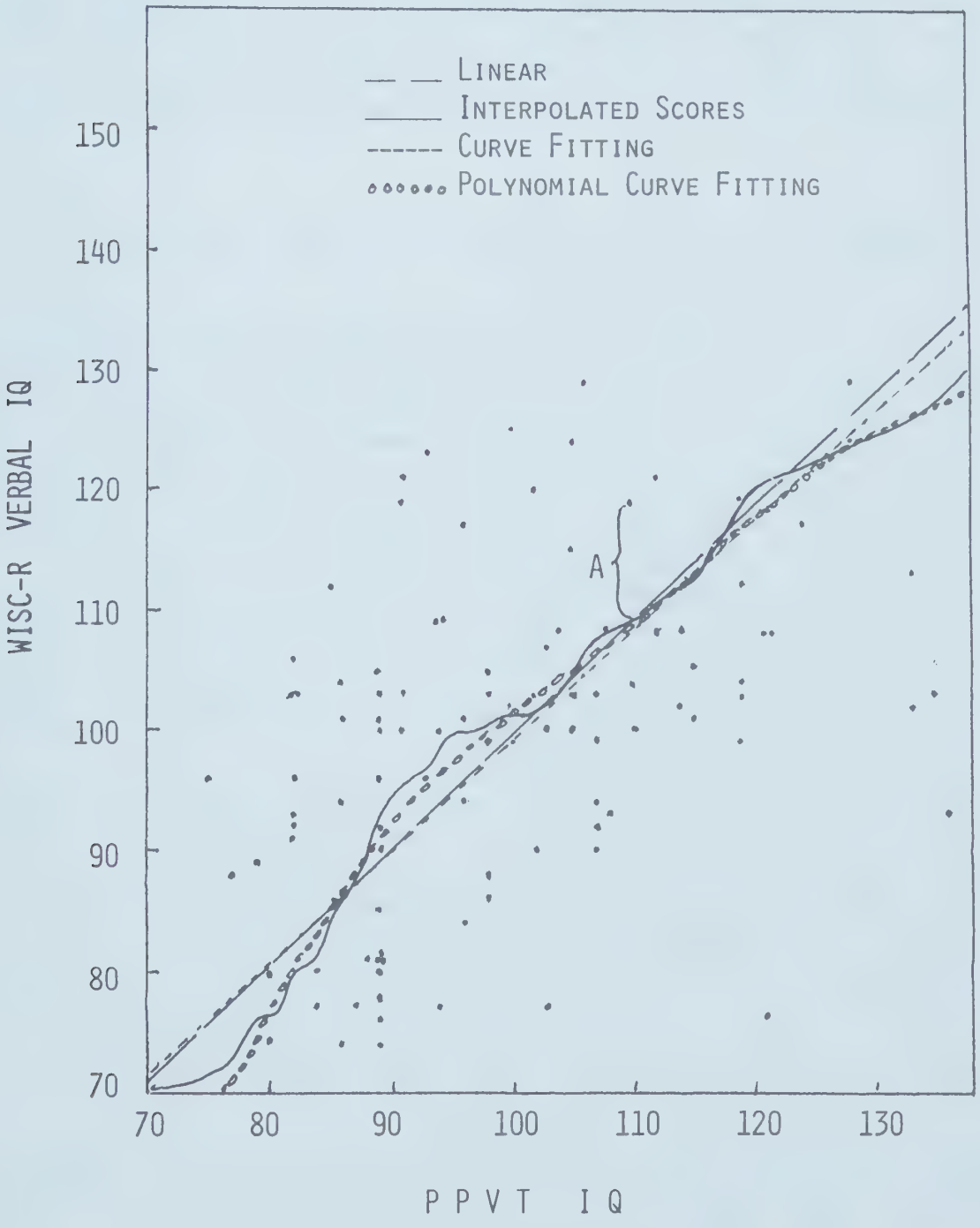
Comparative Example of Linear Equating and Equipercentile Equating for Converting PPVT IQs to WISC-R Verbal IQs

(Age 7½)

$_{c}r_{XY}=.68$, $r_{XX}=.86$, $r_{YY}=.88$

PPVT IQ		Equipercentile Equating			
			Analytical		
				Curve-Fitting	
	Linear	Graphic	Interpolated Scores	Linear	Polynomial
70	71.24	66.2	70.00	71.36	71.12
75	76.04	73.0	71.33	76.25	69.43
77	77.97	74.6	72.67	77.88	71.53
79	78.89	76.0	76.00	79.51	74.24
80	80.85	76.8	76.50	81.14	77.29
82	82.77	78.7	80.25	82.77	80.45
84	84.70	81.5	81.00	84.41	83.56
86	86.62	85.4	85.50	86.04	86.50
87	87.58	87.5	88.00	87.67	89.19
89	89.50	91.0	93.67	89.30	91.62
91	91.42	93.7	95.20	90.93	93.77
93	93.35	96.4	96.60	92.56	95.66
94	94.31	97.6	99.00	94.20	97.34
96	96.23	99.7	99.67	95.82	98.83
98	98.16	101.4	99.83	97.46	100.18
100	100.08	102.8	101.29	99.08	101.45
101	101.04	103.6	101.57	100.72	102.68
103	102.96	104.8	102.43	102.35	103.92
105	104.88	106.0	104.67	103.98	105.18
107	106.81	107.3	107.14	105.61	106.52
108	107.77	108.0	107.86	107.24	107.92
110	109.69	109.4	109.50	108.88	109.42
112	111.61	111.0	111.50	110.51	110.99
114	113.54	112.6	112.75	112.14	112.61
115	114.50	113.4	113.00	113.77	114.26
117	116.42	115.0	115.00	115.40	115.91
119	118.34	116.7	119.00	117.03	117.52
121	120.27	118.4	120.50	118.67	119.07
124	123.15	121.0	122.00	121.93	121.78
128	127.00	124.7	123.50	125.18	123.90
130	128.92	126.6	124.00	126.82	124.75
133	131.80	129.7	126.33	130.08	126.35
135	133.73	131.6	127.67	131.71	127.32
137	135.65	133.8	129.00	133.34	128.65
$\bar{Y}.=100.00$	$RMS_L=$ 13.08	$RMS_G=$ 13.18	$RMS_I=$ 12.94	$RMS_{LC}=$ 12.89	$RMS_{PC}=$ 12.90

was 70 to 129. Taken across all the scores, the conditional root-mean-square error was 13.08. The extent of the discrepancies between observed and converted scores are shown more fully in Figure 1. This diagram shows a scatter plot of the obtained scores with the linear conversion line, represented by the long dashed line, superimposed on it. Discrepancies between an observed WISC-R Verbal IQ and the corresponding equated value for a given PPVT raw score are represented by the length of the vertical segment between an observed score point (represented be a closed circle) and the conversion line (e.g., see vertical segment A).



Graphic equipercentile equating. The converted scores listed in the column of Table 6 labeled "Graphic" were derived following the steps outlined by Angoff (1971) and Flanagan (1951). As shown, they ranged from 66.2 to 133.8. The conditional root-mean-square error of equating was 13.18.

Analytical equipercentile equating. As described by Lindsay and Prichard (1971) the first step of the analytical procedure was to produce interpolated distributions for both PPVT raw scores and WISC-R Verbal scores. The converted values reported in Table 6 correspond only to the obtained PPVT scores; the converted values corresponding to the obtained WISC-R scores are not shown. The second step of the procedure, curve-fitting, represented an attempt to fit a regression line to the interpolated score distributions using both a linear and a polynomial functional equation. The bivariate interpolated score distribution and the linear and polynomial regression lines are shown in Figure 1. The conditional root-mean-square errors corresponding to each of these were 12.94, 12.89, and 12.90 respectively.

Summary

The characteristics of the equating methods and procedures which were demonstrated in the example are summarized below.

Graphic versus interpolated equipercentile equating. The analytical procedure was included in the present study for comparison with the traditional hand-graphing procedure. This comparison involves only columns 3 and 4 in Table 6 (i.e., those columns labeled "graphic" and "interpolated scores"). As can be seen, these two score distributions are very similar. Again, differences are most evident in the extremes of the distributions where data for graphing are scant. Despite these differences, however, examination of the conditional root-mean-square errors of equating reveals that the two procedures are comparable.

The curve-fitting procedures. Curve-fitting, through the application of linear and polynomial regression procedures, was included by Lindsay and Prichard (1971) as a further effort to define the shape of the conversion line. As can be seen by comparing columns 4, 5, and 6, the distributions of predicted scores are similar to the distribution of interpolated scores. This is reflected in the size of the respective conditional root-mean-square errors.

Linear versus equipercentile equating. The linear and equipercentile conversion procedures produced very similar results in the central areas of the distributions. Differences in converted score values are most pronounced in the extremes. However, the conditional root-mean-square errors are of similar magnitude for both linear and equipercentile procedures.

The linear and analytical equipercentile methods were applied to the remaining eight test pairs to be equated to examine possible differences in performance attributable to the different technical characteristics of each test pair (Table 5). Because of the close relation between the graphic and interpolated procedures and the tedium associated with completing the former, there was no advantage in producing the graphic converted scores as well. The results substantiated those illustrated above for the WISC-R Verbal: PPVT, age 7½. As shown by the conditional root-mean-square errors provided in Table 7, there was very little difference between the linear and equipercentile procedures. Consequently, there is no preference for one method over the other in terms of the accuracy of the converted scores in relation to the obtained scores.

TABLE 7

Conditional Root-Mean-Square Error for Equating

Test Pair	Age Level	Linear	Equipercentile		
				Curve Fitting	
			Interpolated	Linear	Polynomial
WISC-R Verbal:SIT	7½	10.19	10.28	10.34	12.18
	9½	12.53	12.11	12.46	14.08
	11½	8.78	9.00	8.72	9.26
WISC-R Verbal:PPVT	7½	13.08	12.94	12.89	12.90
	9½	12.65	12.10	12.65	12.21
	11½	11.43	10.92	11.24	11.19
WISC-R Full Scale:SIT	7½	12.63	12.58	12.84	12.14
	9½	12.14	9.79	11.97	12.83
	11½	9.91	9.79	9.85	10.62

The size of the conditional root-mean-square errors can be judged both in comparison to those found for the Anchor Test Study and in a practical sense as they pertain to test interpretation. In the Anchor Test Study, the conditional error of equating was computed for vocabulary, comprehension, and total reading for two distinct randomly selected test pairs at each of the three grade levels considered. The results were similar for both linear and equipercentile procedures. For equipercentile equating, the average conditional root-mean-square ranged from 3.31 to 10.04; 15 of the 18 values were less than eight (Bianchini and Loret, 1974a, pp. 158-160; 1974b, Tables 2170-2187). In the present study, the results were again similar across the different equating procedures. However, the conditional root-mean-squares were higher and less variable, ranging from 8.78 to 14.08 (see Table 7). Using the obtained WISC-R scores as the criteria against which the equivalent scores were compared, discrepancies of ±11-12 points were frequently observed. In reference to score interpretation, this suggests that a discrepancy of as much as ±12 score points would be expected between an observed and converted WISC-R score value. Looked at another way, the average discrepancy exceeded the standard error of measurement (approximately five points) in most cases by a factor of two. Deviations of this magnitude are intolerable for scores on which educational decisions are based. Therefore, the magnitude of these errors was interpreted as evidence of the nonequatability of the nine test pairs which had been judged as psychologically equivalent and which met the technical criteria, relaxed from those associated with parallelism, used in this study.

Conclusions

The magnitude of the conditional root-mean-square errors of equating associated with both linear and equipercentile equating methods was interpreted as an indication of the nonequatability of the pairs of intelligence tests selected for equating in this study. In light of this finding, the criteria established for the equivalence of the tests are reassessed. Following that, the implications of the results for testing practice are examined.

The Equatability of Nominally Parallel Test Pairs

The justification for the equating phase of this study was established using the concepts of functional, psychological, and statistical equivalence. The functional, or practical, equivalence of the four intelligence tests used generated the research question regarding the feasibility of an equating study. Functional equivalence alone, however, is based on the simple face validity of tests having a common name and claim, and was deemed an inadequate justification for the consideration of parallelism.

The determination of psychological equivalence of test pairs was based on an analysis of the similarity of the psychological function measured by each test. Thus tests labeled as verbal measures of intelligence and having obvious verbal content (e.g., WISC-R Verbal and PPVT) were considered psychologically parallel. These designations were further supported by the results of previous empirical studies showing high correlations and/or factor loadings. The notion of content similarity was, however, defined in a broad sense rather than in terms of the balance of items measuring similar skill categories or domains across tests as in the Anchor Test Study (Jaeger, 1973). Thus, for example, a global notion of verbal measurement may be inadequate to account for differences in the unidimensionality of the verbal task required for the PPVT and the multidimensionality of the verbal tasks required for the five WISC-R Verbal subtests. Although Lord and Novick (1968) provided no guidelines for the degree of test similarity required for nominal parallelism, Marks and Lindsay (1972) stressed the notion of *slight* differences only among tests considered as nominally parallel.

The lack of specificity regarding the size of correlations delimiting nominal parallelism was similarly noted. Again, although Lord and Novick (1968) provided nonstatistical criterion of similarity, Marks and Lindsay (1972) referred to high correlations, while others suggested a cut off value of .95 (Loret et al., 1974, p. 8; Linn, 1975, p. 206). However, for the range of disattenuated correlations observed (.68 to .94), there were no appreciable differences in the sizes of the conditional root-mean-square error of equating. Thus it was concluded that although high correlation appears to be necessary for equating, high correlation alone is not sufficient. As suggested above, content similarity based on item and domain correspondence is also required.

The Use and Interpretation of the Converted Score Scales

From a practical point of view, the results of the study confirm the nonequivalence, that is, the noninterchangeability of the four individually administered intelligence tests examined. However, the converted IQ scales for the WISC-R, PPVT, and SIT are comparable; that is, given the similarity of the score distributions noted earlier, a given score value represents a constant rank position across tests for the population identified in this study. The comparability of IQ scores is implied in common usage when a constant meaning is associated with mean 100 and standard deviation 15 or 16. The fact that the initial IQ scales were derived using different standardization groups and different score conversion procedures, however, violates the conditions of comparability. The scales produced in this study, computed using a common sample and conversion procedures, provide for the correct use and interpretation of comparable IQ score scales in the study population and in populations with similar performance levels.

Note

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Relationships Between Types of Assignments, Writer Variables, and Emotions of College Composition Students[1]

Twenty-four undergraduate expository writing students wrote three affectively toned essays, four traditional expository essays, and two research drafts. The intensity with which they experienced various emotions before, during, and after writing was measured repeatedly, as was the frequency with which these emotions were experienced when writing in general. Intensity and frequency declined across episodes. Increased positive affect intensity was observed after most episodes. Little negative affect was noted, but when changes after writing occurred they reflected diminished intensity. Students writing on their own reported generally lower intensities and frequencies of emotion, regardless of valence. Satisfaction with written products was directly related to positive affect intensity but inversely related to negative affect intensity. Type of assignment influenced emotions, and writing skill was related to affect differentially when rated by teacher versus student.

Language as a cognitive process has recently been the focus of considerable theoretical investigation. Written discourse, in particular, is said to function best as a conscious and intentional act that can be planned, tracked, predicted, and controlled (Flower & Hayes, 1981; Scardamalia, Bereiter, & Goelman, 1981).

Emotion is virtually ignored in this research. When emotion is examined, it is expected to disrupt the process: writer's block (Rose, 1984), writing apprehension and academic correlates (Daly & Miller, 1975b), writing anxiety (Bloom, 1980; Holladay, 1981), writing apprehension and personality correlates (Daly & Wilson,

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1983), a scale measuring writing apprehension (Daly & Miller, 1975a), and reducing writing apprehension (Fox, 1980; Powers, Cook, & Meyer, 1979; Smith, 1984).

A random search of autobiographical material of professional writers reveals wide and interesting patterns of emotions. The literature suggests that negative emotions move established writers to composing or to expressing their emotions in writing as easily, if not more easily, than positive emotions. Authors seem to be able to turn even depressive psychological states associated with diminished activity into powerful motives for writing. Lashing out types of emotions appear to diminish or be replaced by feelings of satisfaction or relief during or toward the end of writing. However, dissonant emotions seem to have as much potential for motivating writing than entirely positive or negative ones. Finally, generalized states of emotional arousal for which no value is necessarily attached also appear capable of mobilizing for writing and sustaining it (Brand, in press).

On the basis of such anecdotal information, a first study (Brand & Powell, in press) of the emotions of student writers indicated that positive emotions increased and negative emotions decreased during writing. Skilled writers experienced more positive emotional change during writing than their unskilled counterparts and generally less negative feelings. All writers, regardless of skill, experienced more negative feelings when writing on their own than when engaged in required school writing.

The purpose of this study is to extend the work summarized above. It is designed to identify relationships among emotion states and traits and writing episodes in a college level advanced expository writing class. Of especial interest are the emotions associated with several types of writing exercises, skill, and writing self-sponsorship. In addition, self-rated emotionality and satisfaction with the written product is examined.

Emotion states are defined as qualitatively distinct conditions of the mind that have bodily and physiological properties. The subjective quality of the experience constitutes its central feature, and we know it as feelings or emotion. Emotion traits are affective dispositions of long standing and may be likened to personality characteristics. Emotion states are temporary departures from the emotional substrata or transitory reactions to particular phenomena (Zuckerman, 1977).

Method

Sample

Twenty-four college composition students from the University of Missouri—St. Louis participated in this study. These students were enrolled in the second semester of a one-year, lower division required advanced expository writing course. Eighteen students were under 25 years of age. There were 10 females and 14 males. The number of years these students had been writing on their own ranged almost evenly from zero to 20, with the median at 13. Four considered themselves easy-going emotionally, 17 rated themselves moderately emotional, and three rated themselves as very emotional. At the outset of the study, six subjects rated themselves more skilled in writing than their peers. At the end of the semester six subjects were rated as skilled writers by their instructor.

Instrumentation

The Brand Emotions Scale for Writers (BESW Trait-When-Writing (TWW) form and BESW State (SD) form) (Powell & Brand, in press) is a 20-item, paper-and-

pencil self-report designed to measure the emotions involved in writing. The BESW was originally adapted from the Differential Emotions Scale (Izard, Dougherty, Bloxom, & Kotsch, 1974) which groups 30 emotion items into 10 a priori categories and has equivalent trait and state forms.

The TWW form is concerned with how people feel in general when they write and how frequently the emotions are experienced during typical writing episodes. The S form is concerned with how people feel before, during, and after writing a particular piece and asks about the intensity of emotions at those times. The TWW and S forms include narrative questions.

On the basis of a typology of the emotions (Davitz, 1969), three a priori factors on the BESW were identified: Positive, Negative Passive, and Negative Active. The Positive emotions consist of the items adventurous, affectionate, excited, happy, inspired, interested, relieved, satisfied, and surprised. The Negative Passive emotions are ashamed, bored, confused, depressed, lonely, and shy. The Negative Active emotions are afraid, angry, anxious, disgusted, and frustrated.

Several studies were conducted to assess the validity and reliability of the BESW scale, with validity coefficients ranging from .62 to .84 for the three factors on the emotion state observations and .64 to .80 for the three factors on the emotion trait observations. Reliability coefficients ranged from .71 to .85 (Norton, 1985). The factor analysis yielded two factors for each observation, accounting for 36% to 44% of the total variance on the three observations (i.e., TWW, S form before writing, S form after writing, Powell & Brand, in press).

Procedures

On four separate occasions during an eight-week summer session, students completed a demographic data sheet and three TWW forms. They also completed S forms immediately before (Pretest) and after (Posttest) nine required writing assignments. During three of the writing episodes, students were interrupted and were administered a Midtest S form. Except for the writing episode analyzing the word "real," all topics were student-selected. The writing schedule follows.

Week 1: Pre/Posttest S form about a confusing experience
Week 2: Pre/Postest S form with a descriptive essay
Week 3: Pre/Posttest S form with an analytic essay
Pre/Posttest S form (with Midtest) about an adventurous experience
Week 6: Pre/Posttest S form with an early draft of a research paper
Pre/Posttest S form (with Midtest) about a boring experience
Week 7: Pre/Posttest S form with a comparison/contrast essay
Week 8: Pre/Posttest S form (with Midtest) with an analysis of how we use the word "real"
Pre/Posttest S form with the final version of research paper

Students were asked to be honest and accurate and told that their responses on the demographic data sheet or the BESW would have no bearing on their grades. The number of subjects per writing episode varied from 16 to 24. Ten subjects were present for all nine episodes.

Results

Descriptive statistics, trends, and mean differences are reported first according to the sequence in which the observations were made. The alpha criterion in all tests of statistical significance was .05. Only trend tests were directional.

Means and Trends Across Episodes

Table 1 shows descriptive statistics for the emotion scales across time. Pre- and posttest Positive S means declined sharply early in the semester. The remaining slope was moderate and negative, but plummeted during the Boring Experience episode. By the end of the semester the Positive S pretest mean was 5.2 points below the corresponding pretest mean of the first writing episode (on a 9- to 45-point scale). The final Positive S posttest mean was 5.6 points below the first posttest mean. Spearman trend coefficients (rhos) were $-.64$ ($p<.05$) and $-.84$ ($p<.005$) for the pretest and posttest means respectively.

A similar decrease in Negative Passive pretest and posttest means was observed. The final pretest mean was 2.2 points lower than the first (on a 6- to 30-point scale); the corresponding final posttest mean was 2.3 points lower. The trend coefficients for pretest and posttest means were $-.83$ ($p<.005$) and $-.62$ ($p<.05$). Again, slopes were temporarily interrupted during the Boring Experience episode.

The Negative Active S data resembled those of the Negative Passive. The final pretest mean was 2.1 points lower than the first pretest mean, and the final posttest mean was 2.7 points lower than the posttest mean of the first episode (on a 5- to 25-point scale). Pretest and posttest trend coefficients were $-.75$ ($p<.025$) and $-.27$ (n.s.), respectively. All successive TWW means declined.

Mean Differences

Mean differences are summarized in Table 2. Although directionally identical to the declining trends in pre- and posttest means, statistical significance was not reached for trends in mean differences (rhos were $-.362$, $-.058$, and $-.112$, for the posttest-pretest Positive, Negative Passive, and Negative Active, respectively). Within episodes, however, seven of nine Positive S posttest means were significantly greater than pretest levels. Three of nine Negative Passive S posttest means were significantly less than pretest levels. But only one Negative Action posttest mean was significantly less than its pretest counterpart.

Among the three episodes in which midtests were available, two Positive means were significantly greater than pretest levels, and one Negative Passive S mean was significantly less than its pretest mean. A significantly greater posttest than midtest Negative Active mean was observed for one episode.

The means for all three scales of the third TWW were significantly lower than their first TWW counterparts. Second TWW Positive and Negative Passive means were significantly lower than those of the first. The third TWW Positive mean was significantly lower than that of the second TWW.

Writing Achievement or Skill

Affect was also examined according to writing achievement as rated by both the instructor and the students themselves. Instructor ratings were measured on a 2-point scale. Student self-ratings were measured on a 3-point scale. Seventy-five percent or 18 of 24 instructor and student ratings agreed. The frequencies with

TABLE 1

Descriptive Statistics for the Emotion Scales

Date	N	Positive M	Positive SD	Negative Passive M	Negative Passive SD	Negative Active M	Negative Active SD
			TWW Scales				
First	24	26.3	5.1	12.0	4.3	12.3	3.5
Second		22.8	6.1	10.0	2.5	10.6	2.8
Third	19	20.5	5.5	9.8	2.1	10.2	3.0
			VM Scales				
First	20	15.8	6.1	8.8	1.9	7.8	2.4
Second	19	15.2	6.7	9.7	3.5	9.2	3.7
			S Scales				
Confused Pre	23	21.2	(5.5)	9.9	(2.9)	9.7	(3.9)
Confused Post	23	26.0	(7.4)	9.7	(4.3)	9.8	(5.2)
Descript Pre	20	19.0	(6.3)	9.4	(3.2)	9.2	(3.4)
Descript Post	20	24.6	(6.7)	7.6	(2.0)	6.9	(2.0)
Analysis Pre	20	18.3	(6.2)	8.0	(1.5)	8.1	(2.8)
Analysis Post	20	21.8	(7.2)	7.9	(2.0)	7.6	(3.7)
Adventure Pre	18	15.8	(6.5)	8.7	(2.8)	7.5	(1.9)
Adventure Mid	18	19.5	(7.5)	7.5	(2.7)	7.8	(2.8)
Adventure Post	18	21.8	(6.9)	7.3	(2.4)	6.8	(2.3)
Research D Pre	19	16.8	(5.9)	8.1	(1.8)	7.8	(3.4)
Research D Post	19	20.8	(8.1)	7.6	(2.0)	7.9	(4.3)
Boring Pre	16	14.3	(4.4)	8.4	(1.9)	6.8	(1.6)
Boring Mid	16	14.1	(4.4)	8.3	(2.0)	7.5	(2.6)
Boring Post	16	15.2	(5.8)	8.9	(2.7)	6.7	(1.9)
CTC Pre	18	17.1	(7.0)	7.6	(1.3)	7.3	(1.9)
CTC Post	18	20.0	(6.7)	6.9	(1.2)	7.4	(4.0)
Real Pre	18	16.0	(4.8)	7.4	(1.8)	7.1	(2.1)
Real Mid	18	19.8	(7.1)	7.4	(2.3)	7.6	(2.6)
Real Post	18	20.6	(7.9)	7.2	(1.8)	7.5	(3.3)
Research F Pre	16	16.0	(6.3)	7.7	(1.3)	7.6	(2.0)
Research F Post	16	20.4	(9.1)	7.4	(1.8)	7.1	(2.9)

which episode means were numerically greater for skilled versus unskilled writers were evaluated through cumulative binomial distributions. The probability of a single chance occurrence was set at .5. Separate analyses were computed for instructor-rated and student-rated skill. No significant differences were found.

Instructor-rated skilled writers reported higher Positive affect on all three TWW observations, and higher Negative Passive and Negative Active mean frequencies than unskilled students on two of the three TWWs. Self-rated skilled writers reported identical mean frequencies for the Negative Passive factor among all TWWs but lower mean frequencies of Negative Active emotions on two TWWs. With only three observations, statistical significance was not obtainable.

Students above the median (20) in years of writing on their own were considered self-sponsored writers. They reported significantly more Negative Passive affect than other writers on only one observation ($p = .011$), and no instances in which Negative Active affect was more intense than those of the nonself-initiators. By and large, self-sponsorship of writing and emotion traits were not associated.

Emotions were contrasted for students above and below the median in self-rated emotionality. The more emotional students reported significantly more Negative Active feelings on 89% ($p=.011$) of the observations. Similarly, the more emotional students reported higher mean frequencies of Positive and Negative Active affect on all three TWWs and higher mean frequencies of Negative Passive affect on two of three TWW observations.

Students above the median in satisfaction with each of their written products reported significantly higher Positive feelings than less satisfied students ($p=.004$). Eight of nine Negative Active factor posttest means were significantly lower ($p=.0392$) for the more satisfied students.

TABLE 2

Mean Differences

	Positive		Negative Passive		Negative Active	
	M Diff	t	M Diff	t	M Diff	t
TWW Scales						
Third-First	−5.8	−4.04**	−2.2	−2.14*	−2.1	−2.28*
Second-First	−3.5	−2.87**	−2.0	−2.18*	−1.7	−2.03
Third-Second	−2.3	−2.51*	−0.2	−0.00	−0.4	−0.16
VM Scales						
Second-First	−0.6	−0.49	0.9	1.17	1.4	1.77
S Scales						
Confused						
Posttest-Pretest	4.8	2.78*	−0.2	−0.25	0.1	0.09
Descriptive						
Posttest-Pretest	4.6	2.91**	−1.8	−2.67*	−2.3	−3.07**
Analytical						
Posttest-Pretest	3.5	2.82*	−0.1	−0.22	−0.5	−0.69
Adventure						
Posttest-Pretest	6.0	4.74**	−1.4	−2.90**	−0.7	−1.36
Midtest-Pretest	3.7	3.64**	−1.2	−2.32*	0.3	0.45
Posttest-Midtest	2.3	2.65*	−0.2	−0.88	−1.0	−1.97
Research Draft						
Posttest-Pretest	4.0	2.65*	−0.5	−1.27	0.1	0.10
Boring						
Posttest-Pretest	0.9	0.64	0.5	0.69	−0.1	−0.16
Midtest-Pretest	−0.2	−0.25	−0.1	−0.25	0.7	1.07
Posttest-Midtest	1.1	1.41	0.6	0.88	−0.8	−1.97
Compare & Contrast						
Posttest-Pretest	2.9	2.37*	−0.7	−2.43*	0.1	0.14
Real						
Posttest-Pretest	4.6	2.71*	−0.2	−0.84	0.4	0.88
Midtest-Pretest	3.8	2.29*	0.0	0.00	0.5	1.24
Posttest-Midtest	0.8	0.69	−0.2	−0.70	−0.1	−0.26
Research Final						
Posttest-Pretest	4.4	2.11	−0.3	−0.76	−0.5	−0.98

*$p \leq .05$
**$p \leq .01$

Types of Assignment

Pretest to posttest mean differences were ranked and examined by the following breakdown of assignments: those with an affective tone, that is, Confused, Adventurous, and Boring experiences; traditional expository writing topics, that is, Descriptive, Analytic, Compare/Contrast, and Examination of the word "real"; and Research Draft and Final Research Paper.[2]

Assignments with Specific Affective Tone

Among the nine assignments, the Adventurous and the Confused experiences ranked first and second highest in increase of Positive affect. Negative Passive emotions decreased numerically for the same two episodes, but decreased significantly only for the Adventurous assignment. The Adventurous experience ranked second highest in both decreased Negative Passive and Negative Active emotion. The Boring experience episode ranked last and was the first episode for which there was no statistically significant increase in Positive affect. It was also the only episode for which there was a numerical increase in Negative Passive affect.

On the three assignments involving affective tone, instructor-rated skilled writers reported greater Positive emotion as frequently as the unskilled. Self-rated skilled writers reported more intense Positive feelings on 83% of the observations. Instructor-rated skilled writers reported stronger Negative Passive and Negative Active means 33% of the time. Self-rated skilled writers reported stronger Negative Active emotion 33% of the time, but greater Negative Passive affect only 17% of the time.

Self-sponsored and nonself-sponsored writers reported stronger Positive emotions with equal frequency. But in none of the observations was the Negative affect of self-sponsored writers higher than those of students not writing on their own ($p=.03$).

More emotional students reported stronger Positive emotions than the less emotional students on 33% of the observations, more Negative Passive feelings on 67%, and Negative Active affect on 83% of the six observations. Students above the median in satisfaction with their affectively toned compositions reported consistently higher Positive factor posttest means ($p=.03$) and consistently lower Negative Passive and Active factor posttest means ($p=.03$).

Traditional Expository Assignments

The traditional expository assignments asked students to (a) Describe, (b) Analyze, (c) Compare/Contrast, and (d) Explain the use of the word "real." The Descriptive assignment stands apart from the others in this group in one important way. It was the only episode in which changes in all three factors were statistically significant. The Descriptive assignment ranked highest in decreased Negative Passive and Negative Active affect, and it tied with the "real" assignment as third highest in increased Positive affect. A significant decrease in Negative Passive affect was found in the Descriptive and Compare/Contrast episodes.

Instructor-rated skilled writers reported greater Positive intensity across these observations than their self-rated counterparts. Instructor-rated skilled writers reported greater Negative Passive affect 50% of the time, while self-rated skilled writers reported stronger Negative Passive feelings only 12% of the time. Similarly, instructor-rated skilled writers reported greater Negative Active affect 38% of the time, whereas self-rated skilled writers reported greater Negative Active affect

twice (25%). While instructor-rated skilled writers reported stronger Negative emotions on the Descriptive episode, their unskilled counterparts reported stronger Negative emotions on the Analytic and real episodes.

Self-sponsored writers reported stronger Positive affect on half of the traditional group observations, stronger Negative Passive affect only once, and stronger Negative Active affect not at all ($p=.008$). The more emotional students reported stronger Positive and Negative Passive affect on 62% of the traditional group observations and greater Negative Active affect on 88% of them. As was the case for the emotionally toned episodes, students more satisfied with their traditional compositions reported consistently higher Positive factor posttest means and lower Negative Passive and Negative Active posttest means ($p=.008$).

Research Assignments

In magnitude of increased Positive affect, both Research episodes ranked in the middle of the distribution. The Final Research paper ranked higher than the Draft in decreased Negative Passive and Negative Active affect. In terms of skill, there was no difference in Positive and Negative Active affect between instructor- and self-rated skilled writers. However, the instructor-rated skilled group reported stronger Negative Passive feelings on 50% of these observations, while the self-rated skilled group reported this for 75% of them. On the final research paper, instructor-rated unskilled writers reported stronger Positive and Negative Passive feelings.

Self-sponsored writers reported consistently more Positive and less Negative feelings on both Research exercises. No difference in frequency of Positive affect was found when emotionality was examined. But the more emotional students reported more Negative Passive and Negative Active affect on all Research observations. The relationships between writer satisfaction, the research products, and mean affect intensity differed from earlier findings. The more satisfied writers of Research Drafts reported stronger posttest Positive and Negative Passive emotions but weaker posttest Negative Active emotions. The more satisfied writers of the Final Research paper reported stronger emotions on all three posttest factors.

Discussion

Despite the small sample size and great number of variables, several findings stand out. Emotional intensity clearly decreased as the semester progressed. Slopes were especially sharp early in the semester then seemed to level off. Echoing the stabilizing effect of emotions across episodes, students perceived themselves as feeling emotions less frequently when writing in general. Significant decreases in trait frequencies were present in six of nine comparisons, and all mean differences were negative. Emotion traits are theoretically stable. The changes in trait factors, however, suggest otherwise. One hypothesis is that emotion traits in writing change as writing experience increases. Another explanation is that students may have overestimated the degree to which their state conditions could be generalized to other writing contexts.

But the most plausible explanation for state and trait changes involves students' attitudes toward the class. That school apathy is endemic is conventional wisdom and has corroboration in the literature (Brand & Powell, in press; Csikszentmihalyi, 1975; Csikszentmihalyi & Larson, 1984; Larson, 1984). This study was conducted during a summer session in which 16 weeks of regular

semester work was condensed into eight, with some subjects filling out as many as 26 emotion scales during this period. The quantity of writing and the repetitive measurement process could induce still more fatigue and tedium. The entire group consisted of six skilled writers and 18 unskilled writers. We would expect unskilled writers to feel negative about a required writing class. Even strong writers can suffer academic burnout, though perhaps for different reasons. What we found seemed to be a related phenomenon: a persistent erosion of initial interest. Students were not increasingly bored; they simply felt progressively less.

Accompanying these decreases were changes within episodes. Part of these changes can be attributed to the varying lengths of the factor scales. But most changes indicate that the students were, in fact, reacting differentially to the emotion items. Positive changes were uniformly direct and relatively strong. With one exception, negative passive changes were inverse and moderate. Negative active changes were mixed and weak, replicating the findings of Brand and Powell (1986). Given the intensity of the instruction and the number of scale administrations, however, we would expect students to experience not less but more negative active emotion. This was not the case. Negative active emotions were more resistent to change than the negative passive.

Despite the flattening effect of affect across episodes, there were more emotional fluctuations when emotions were written into the prompt than when it was traditional exposition. The most statistically dynamic were the emotionally toned and descriptive exercises, all of which encouraged students to write about personal matters. Despite its middle position in the assignment sequence, writing about an adventurous experience produced the greatest positive increase. Even the confused assignment produced positive feelings.

Except for the boring episode, the research episodes prompted the most negative reactions. The final research paper ranked fifth in numerical increase in positive affect. Yet three of the four episodes before it were accompanied by statistically significant increases in positive feelings which were numerically lower. For these episodes observations were available on only 16 students, the lowest level of participation in the study. Had the mean increase held constant with several more subjects, the increase in positive affect on the final research episode would have reached significance. In contrast, even if all 24 students had been present during the boring episode, with the same mean increase, significance would not have been reached. Clearly, magnitude of difference is not the only factor in determining statistical significance. Sequence of assignment is important in student response. So too is type of assignment.

The pattern of emotions associated with the boring episode appeared dramatically different from that of all other tasks, emotionally toned or otherwise. Students were not only asked to write about a boring experience, but the term was directly represented on the negative passive scale. It is not surprising that the boring experience ranked last in increased positive feelings and was the only episode that resulted in more negative passive feelings. Indeed, writing about something boring induces boredom. Emig (1971) reported that even competent student writers working on topics unrelated to boredom found little satisfaction when contemplating their finished work. Like starting, finishing writing is viewed as a "mundane moment devoid of any emotion but indifference and the mildest of satisfactions that a task is over" (p. 87). Emig further explained that the lack of affect she observed might reflect an impoverished emotional vocabulary. If this were the case, providing students with that language would allow them to disclose their feelings.

In this study, the BESW gave them positive and negative emotion items alike, and students chose the positive. However, when they saw their writing selves as emotional, they reported more intense negative feelings. The dominant effect in this study was positive. But it is also possible that, regardless of their true feelings, students found it socially unacceptable to disclose negative affect, reminding us once again that emotion still has a bad name.

With one temporary but profound exception, the classroom experiences of these students were apparently anesthesizing and pleasant. Although the population was weighted heavily with unskilled writers, their emotions stayed remarkably positive. However, the constellation of emotions did shift. The five top-ranking emotion items on the pretests were all positive: happy, interested, adventurous, excited, and inspired, in that order. Posttest findings still showed only positive emotions as the top five. But the items, adventurous and inspired, were replaced by relief and satisfaction, both of which tied for highest intensity, confirming a finding reported in the earlier study (Brand & Powell, in press).

Positive feelings at the end of writing seem to refer to a complex of pleasant emotions of which relief and satisfaction are a part. But relief does not necessarily refer to release from a negative situation. It may be linked to a sense of closure that a task is done satisfactorily. Significant relationships were observed between satisfaction with the product and six posttest states. Writer satisfaction was directly related to pleasant feelings after writing, regardless of the assignment and, except for the research episodes, inversely related to unpleasant feelings. This finding indicates that good writing is linked to good feelings and weak writing is linked to bad. We also hypothesize that satisfaction may not be so much an effect as a cause. Dissatisfaction with a product may induce negative feelings, and satisfaction with a product may induce pleasant feelings. To be sure, pleasant feelings are not synonymous with quality writing; in this study there was a high proportion of unskilled writers, who, by definition, do not do satisfactory work. However, they are more easily satisfied with it (Flower & Hayes, 1980). They would also be expected to exercise poor judgment about what constitutes their best writing. Perhaps they reason that, because they work hardest at it in composition classes, their writing ought to be good regardless of its actual merit.

The measure of writing achievement is reflected in the skill ratings. Supporting the findings of Brand and Powell (1986), unskilled writers, regardless of rater, reported more intense negative affects—which makes sense. On the other hand, the longer students had been writing on their own the more positive they tended to feel after they wrote and almost always before. These students were also less hostile to the formal school activity, a finding that agrees with Brand and Powell.

Self-sponsored and skilled writers alike reported generally lower negative affect on all but the research assignments. Students accustomed to writing on their own felt better about it as did skilled writers. This has its virtues and drawbacks. Having learned to function in an environment that prizes passivity, these students approach their writing in a businesslike, matter-of-fact manner. However, because the school context so dominates their task environment, they are not likely to experience the emotions professional writers find useful in the writing process (Brand, in press).

Subdividing skilled writers by rater, self-rated skilled writers reported substantially more positive feelings on the affectively toned episodes than the instructor-rated skilled writers but weaker positive feelings on the traditional assignments.

Our sense is that writing teachers generally value traditional exposition and communicate it. It stands to reason that they would rate as skilled students who perform well on these types of assignments. These students would, in turn, feel good—a phenomenon which we call the goody-two-shoes effect. All in all, we found a more discriminating picture of affect when skill was defined by the students themselves. So it seems that self-perception of skill is a more sensitive predictor of emotional response to academic writing than instructor-rated skill, again confirming the earlier study (Brand & Powell, in press). Examining the relationship between writing achievement and emotion can be improved by increasing the number of intervals on which writing performance can be measured.

Considerable research is being conducted to describe writers' cognitive processes. Affective outcomes are a long-standing educational objective, but they have seldom received systematic attention and certainly not in writing theory and research. Furthermore, there is virtually no body of knowledge on the interaction of cognitive and affective processes in a full range of academic skills, much less in writing.

The present study is a second effort to describe relationships among emotion variables potentially important in the highly cognitive process of writing. These findings, together with those obtained on the intellectual patterns of writers, suggest that complex interactions occur during the writing process, which are at once cognitive and affective, physical and psychological, and enabling and disabling. Assignment topic and type influence these outcomes in much the same way. Emotions, cognitions, and achievement are sensitive to teachers' views of their students as writers and students' views of themselves. Emotions are guided not only by the nature of the task but also by the very participation in it. If little else, we surely need to reconsider the impact of academic writing situations on student response.

Notes

1. A complete description of the scale design and development as well as the factor analysis, cross-validation studies, and tests of reliability may be obtained from Dr. A.G. Brand, Department of English, 8001 Natural Bridge Road, University of Missouri—St. Louis, St. Louis, Missouri 63121-4499.
2. Although the research paper is clearly a traditional expository writing assignment, because it was a longer, more complicated undertaking, it was addressed separately.

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Mainstreaming Exceptional Children: Teacher Attitudes and the Educational Climate[1]

The attitudes of classroom teachers toward exceptional children and the notion of mainstreaming are crucial, at least as important as teacher competencies, curricula modifications, or administrative strategies. Many variables affect teacher attitude formation and maintenance, but the relative impact of each remains imprecise. This study used a 25-item Attitude Survey to assess teacher attitudes toward current philosophies and concepts regarding mainstreaming. Results indicated that in Australia, where integration is a rather new and not wholly accepted educational policy, teacher attitudes were significantly less favorable than were those of two Canadian teacher samples.

The past 30 years have witnessed an increasing interest and involvement in special education in countries in all stages of development. Generally, the creation of societies in which handicapped persons can enjoy productive and fulfilling life styles is now seen as an imperative, rather than a dream (Ward, 1980).

In Canada the integration of exceptional children into the regular educational milieu is now policy. Currently, six provinces have some form of mandatory legislation regarding exceptional youngsters. The other provinces and the two territories have permissive legislation, implying that they may provide services but are under no legal obligation to do so (Goguen, 1980).

However, across the country, the general issues of children's rights, individual education plans, and least restrictive environments are being resolved (McMurray, 1980). Mainstreaming is the most prevalent pattern of instructional organization for special education programming. Nearly 77% of Canadian exceptional children are placed in integrated classroom settings (Council of Ministers of Education, 1983).

Approximately 15.5% of the Canadian school age population will require special education services at some point during their school careers (Council of Ministers of Education, 1983). Similarly, Australian educators estimate that 15% to 16% of children need special education services (Ward, 1980).

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In recent years in Australia an increasing interest in, and commitment to, special education has been fueled by a number of federal and state documents (Cohen Committee, 1973; Interim Committee for the Australian Schools Commission, 1973; Senate Standing Committee on Education, Science and the Arts, 1972; Senate Standing Committee on Health and Welfare, 1971; Victoria, Department of Education, 1984) along with nongovernment reports (Rehabilitation International, 1979; Rigby, 1973). The issue of integration or segregation has become one of the major contemporary issues of Australian special education.

It is now Australian policy to provide a free and appropriate education for exceptional children in the regular schools. However, while integration is an Australian-wide policy, it remains a matter of philosophy rather than practice (Morris, 1982). Although legislation has been discussed and promoted (Steinberg, 1980) none is yet in place. Indeed, Andrews, Elkins, Berry, and Burge (1979) concluded that, as far as special education was concerned, the Australian legal system was in considerable disarray.

As the explicit expression of the principles and ideas of normalization and mainstreaming become increasingly manifest in practice, exceptional pupils are no longer solely the responsibility of special educators, maintained in self-contained classrooms, special schools, or institutions. Rather, many exceptional youngsters are now within the orbit of the public schools, placed in regular classrooms, and the responsibility of regular classroom teachers. Hence much of the success of integration depends upon the preparation and training of regular classroom teachers, the availability of support services and, of prime importance, the teachers' attitude toward the children and their acceptance of responsibility for their education (Drummond, 1978).

It is generally accepted that teacher attitudes can positively or adversely affect student achievement, student behavior, and teacher behavior. The attitudes and subsequent expectations held by classroom teachers are crucial, at least as important as teacher competencies, curricular modifications, or administrative strategies. But a body of literature has demonstrated that regular classroom teachers are not overwhelmingly supportive of the notion of mainstreaming. They are ill-prepared for the enterprise, both in attitude and knowledge. They harbor generally unfavorable attitudes toward the concept and process, and argue for the retention of special classes (Barngrover, 1971; Bond & Dietrich, 1982).

Given the crucial nature of teacher attitudes, investigators have probed various aspects of attitude formation and maintenance. This research has generally been contained within three major categories. First, studies have been directed toward acceptance-rejection issues in regard to specific groups of exceptional pupils (Curtis, 1985; Guerin, 1979; Mitchell, 1981; Moore & Fine, 1978; Shotel, Iano & McGettigan, 1972; Smith, 1979; Vacc & Kirst, 1977; Vandivier & Vandivier, 1981; Ward, Parmenter, Riches, & Houritz, 1978). A consistent finding of such investigations is that regular classroom teachers prefer special class placement for children classified as mentally retarded and emotionally disturbed. If mainstreaming is inevitable, then learning disabled students are preferred.

A second body of literature has investigated the relationship of teacher variables and attitudes toward mainstreaming. (De Leo, 1976; Donaldson & Martinson, 1977; Guerin & Szatlocky, 1974; Harisymaw & Horne, 1975; Higgs, 1975; Larrivee & Cook, 1979; Smith, 1979). Areas of interest have included teacher sex, age, years of

experience, grade level taught, geographical location, and position in the educational hierarchy. The results of such investigations are generally inconclusive.

A third group of studies have investigated whether knowledge about, and exposure to, exceptional individuals can positively change attitudes (Bond & Dietrich, 1982; Brooks & Bransford, 1971; Cronk, 1978; Donaldson & Martinson, 1977; Glass & Meckler, 1972; Harisymaw & Horne, 1976; Johnson & Cartwright, 1979; Larrivee, 1981; Leyser, Abrams & Lipscomb, 1982; Naor & Milgram, 1980; Reed & Hill, 1981; Sanche, Haines, & Van Hesteren, 1982; Winzer, 1984b). These studies indicate that information and exposure are potent factors in establishing and maintaining positive feelings toward exceptional individuals and the concept of mainstreaming.

Fewer studies have investigated the attitudes of prospective teachers. However, research has demonstrated that students hold generally positive attitudes (Curtis, 1985; Drake, 1977; Kang, 1976; Sanche, Haines, & Van Hesteren, 1982; Winzer, 1984a). Special education students tend to be more accepting than regular education trainees (Curtis, 1985; Kiernan, 1974).

Even fewer studies exist regarding whether agreement with the philosophy of mainstreaming, as implied by current laws and policies, may be a determiner of positive teacher attitudes. Ringlaben and Price (1981) found that teachers who tended to report strong agreement with the philosophy of mainstreaming also tended to report that mainstreaming was working well in their classrooms and that it had positive effects on integrated students, on teaching performance, and on attitudes toward teaching. Similarly, Bond and Dietrich (1982) found that agreement with the philosophy of mainstreaming became manifest in positive attitudes. Thus it appears that teacher agreement with the intent of mainstreaming may be a determiner in the success experienced by the exceptional child in the classroom. In addition, an educational climate that promotes mainstreaming may also promote a positive individual philosophy.

Purpose of the Study

This study was designed to examine whether the educational climate, viewed as the concepts and policies in popular circulation, constituted a variable in determining the attitudes of teachers toward exceptional children and the notion of mainstreaming. Three geographical areas were selected as sites for the investigation. Two were in Canada: Ontario, which has mandatory legislation concerning exceptional children; British Columbia, which has not passed mandatory legislation, but both policy and practice promote the integration of exceptional children into regular classrooms. In Western Australia, the third location, integration is viewed as acceptable policy, but no legislation is in place.

Method

Instrument

In order to assess teacher attitudes, a 25-question Likert-type scale was developed. The Attitude Scale comprises two dimensions: A, the possible effects of mainstreaming on children, both exceptional and normal, and B, the cost of mainstreaming to the classroom teacher and the school.

The development and use of the Attitude Survey has been reported previously (Winzer, 1984a, 1984b). Reliabilities on the present study, as determined by the LERTAP statistical procedure (Nelson, 1974) were adequate. Dimension A

produced a Hoyt estimate of reliability of .86 and B gave .79; Cronback's alpha reliability coefficient for the total scale was .85.

The Attitude Survey was administered during the opening session of introductory in-service special education courses. Scale items were both positively and negatively worded. Participants were asked to mark one of five alternatives, ranging from strongly agree to strongly disagree. As well, information was requested regarding relatively static teacher variables such as sex, age, status in the educational hierarchy, years of teaching experience, grade level taught, and qualifications to teach exceptional children.

Sample

Samples were drawn from trained teachers taking additional in-service training in three locations: British Columbia ($n=142$), Ontario ($n=109$), and Western Australia ($n=73$). Of the participants, approximately one-third were 25 years of age or less and the rest were 26 or older. In each group, women outnumbered men by approximately two to one.

Drawing samples from in-service special education courses immediately places limitations upon the study. The respondents were not representative of the public at large. Moreover, they may not accurately reflect the attitudes of classroom teachers as enrollment in a special education course may indicate a positive predisposition toward exceptional individuals and the notion of mainstreaming.

Results

The research was undertaken in order to assess whether teachers, functioning under different educational policies and legislation in widely varied geographical areas, held meaningfully different attitudes toward exceptional children and the idea of mainstreaming. Mean attitude scores and standard deviations were obtained, as shown in Table 1.

Inspection of the mean scores demonstrated that both groups of Canadian teachers hold attitudes that lean in a positive direction. Australian teachers are less positive, especially in regard to the costs to the classroom teacher. A probable explanation of these differences is offered by Morris (1982) who observed that while Australian teachers are aware of the mainstreaming advocacy the idea is a matter of philosophy rather than practice. Moreover, Watts and his colleagues (1978) found Australian teachers to be ill-prepared for mainstreaming and unaware of personnel such as resource room teachers.

Using a one-way analysis of variance (ANOVA) contrasts were computed to determine the existence of group differences. The data were examined in regard to teacher-related characteristics: location, sex, age, years of teaching experience, grade level taught, and qualifications to teach exceptional children. Table 2 presents the summary statistics.

The main effect for ANOVA was location. A significant difference on both dimensions was found between the Australian and the Canadian teachers, in favor of the latter. Post hoc Sheffé statistical procedures confirmed that the Australian group demonstrated meaningfully different attitudes, while no statistical differences were found between the samples from Ontario and British Columbia in regard to location alone.

TABLE 1

Responses to the Attitude Survey

	Dimension A				Dimension B				Full Scale			
	N	Mean	s.d.	Total Possible	N	Mean	s.d.	Total Possible	N	Mean	s.d.	Total Possible
British Columbia	138	44.870	3.692	60	136	48.750	4.279	65	134	93.612	6.321	125
Ontario	104	44.971	3.290	60	99	48.010	4.523	65	97	92.866	5.924	125
Western Australia	87	43.437	4.321	60	86	44.570	4.016	65	84	87.929	6.775	125
All Samples	329	44.523	3.798	60	321	47.402	4.617	65	315	91.807	6.749	

TABLE 2

Summary Statistics of Teacher Related Variables

	Dimension A			Dimension B			Full Scale		
	SS	df	F	SS	df	F	SS	df	F
Location	140.111	2	4.978*	973.588	2	26.473*	1807.750	2	22.574*
Sex	11.445	1	0.791	8.006	1	0.377	0.204	1	0.947
Age	5.530	1	0.383	206.006	1	9.875*	306.814	1	6.845*
Status	52.776	4	0.913	233.311	4	2.794**	462.530	4	2.582**
Experience	11.675	2	.159	177.286	2	2.799			
Grade Level Taught	72.286	5	.369	115.340		.645			
Qualifications	794.874	4	6.024*	593.311	4	5.142*	2602.324	4	7.070*

*$p \leq .01$
**$p \leq .05$

Other teacher related variables—sex, age, status, experience, grade level taught, and qualifications—were examined for the total samples. It was found that older teachers demonstrated more favorable attitudes, although experience gave no statistical effect. In three groups, school administrators showed the most positive attitudes confirming the findings of earlier studies (De Leo, 1976; Payne & Murray, 1974). No differences were discovered in relation to the sex of the respondents.

When each sample was examined for intragroup differences, the Australian teachers demonstrated homogeneity in their attitudes. Similarly, the Ontario sample produced an intragroup difference only on the qualifications variable. It was found that the two most highly qualified Ontario subgroups held the most negative attitudes. British Columbia teachers produced no intragroup differences except in relation to grade level taught. There was a tendency for positive attitudes to decrease as grade level increased.

To further examine differences, a one-way analysis of variance, confirmed by Sheffé post hoc procedures, was computed on single items, as shown in Table 3. Location was the component used for this interpretation. With the exception of item 4, the Australian teachers showed less favorable attitudes on all items demonstrating statistical significance. Ontario teachers were least positive about item four.

TABLE 3

Dimension A	Location		Grade Level Taught	
	SS	F	SS	F
1. Mainstreaming the exceptional child will promote his/her independence.	31.023	19.136*	1.317	.316
4. Exceptional children will find it much easier to mix with their peers after leaving school if they have been taught together in regular classrooms.	4.506	3.426**	2.396	.722
9. The integration of exceptional children into regular classes is beneficial to regular pupils.	13.323	9.987*	1.477	.506
12. Mainstreaming offers mixed group interaction which fosters understanding and acceptance of differences.	8.259	8.199*	2.119	1.089
14. Mainstreaming is likely to have a negative effect on the emotional development of the exceptional child.	11.777	6.105*	3.908	.849
16. Mainstreaming will give exceptional students a better chance to readily fit into their home community.	10.602	10.108*	3.139	1.88
17. The exceptional child is likely to be socially isolated by regular students.	8.735	3.122**	2.219	.303
24. Regular students quickly become accustomed to having exceptional pupils in the school and naturally accept them as peers.	7.669	5.013*	2.838	.924
8. The image of a particular school benefits from the presence of exceptional children.	15.804	6.665*	5.252	.852
13. As a teacher, I would be willing to have an exceptional child in my classroom.	8.1311	6.273*	5.018	1.634
15. Classroom teachers should make the decision as to whether or not to take an exceptional child in their classroom.	191.891	66.139*	24.557	2.668**
20. As a teacher, I would be willing to take extra training so as to be able to better handle exceptional children in my classroom.	11.510	11.842*	1.777	.672
23. Teachers need extra training if they are to teach exceptional students.	3.434	3.027**	3.562	1.305

* $p \leq .01$
** $p \leq .05$

Discussion

Attitudes are not a unitary dimension and cannot be captured by a single score. Teacher attitudes are influenced by many factors such as information level, knowledge, attainment, specific skill acquisition, contact and experience, exposure, confidence, and amount of success. The degree to which each impacts on the formation and maintenance of attitudes is not clear.

Obviously, a two-dimensional Attitude Survey, as used in this study, is limited and not exhaustive of the domain of attitudes. Moreover, sampling students from in-service programs inherently biases the results. There is evidence that students who enroll in special education programs hold more positive attitudes than those who enter other educational options (Semmel & Dickson, 1966). It is likely that interest in exceptional people constitutes a major feature when in-service students enter special education.

While any implications should be approached cautiously, the results are nevertheless suggestive. Canadian teachers in this study held attitudes that are generally positive and reflect the idea that, at worst, mainstreaming will not have a negative effect on special children or classroom teachers. On the other hand, the lower ratings of the Australian teachers would suggest that, despite efforts to promote mainstreaming, negative attitudes are still held by many professionals. These bode poorly for the success of mainstreaming and can have serious implications for student success and achievement. However, in Australia provision is being made to educate exceptional children in regular classrooms. Teachers are expected to develop the competencies to teach heterogeneous groups of students. The policy changes are reflected in teacher education programs and, as more special education offerings are made available at the preservice in-service levels, it is to be expected that the degree of commitment to special education will increase.

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PERSPECTIVES

Community Education for the Development of a Rural Ghanaian Village

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This article critically examines contemporary schooling in rural Ghana. It notes the problems that have arisen out of the superimposition of the school as a social institution on the indigenous education that villagers practised prior to the former's introduction. Arguing for a structural transformation of rural village education, an alternative educational model—referred to as "community education-as-an-enterprise"—is proposed to replace the present schooling system. Based on the notion of indigenization of education, the model incorporates the principles of the unity of education and work, and the participation of the community in shaping the program, process, and practice of its own education and development.

Adams and Coulibaly (1985) recently described the indigenous education systems of some West African village communities as being "community-based." Similarly, Wilson (1963), Busia (1964), Scanlon (1964, pp. 1-12) and McWilliam and Kwamena-Poh (1975) have noted the community-oriented nature of indigenous education in the centripetally organized communal societies of Ghana and other African countries. Basically incompatible with the structure and mechanisms of formal education, this African indigenous mode of community education, and especially its socially integrating qualities, has been lost in the transition to the Western schooling system. As a consequence of this loss, the village school finds itself in constant collision with its community (Roberts, 1982). The frequent confrontation between the two has severely curtailed a role for the school in community affairs, particularly in village development efforts. In fact, widespread dissatisfaction with the performance of the school among school leavers, parents, and successive Ghanaian governments is directly or indirectly linked to the village school's inability to

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relate to the community and thus respond to its development needs. This inability underscores the need to find ways of reviving the principles and practice of indigenous African community education to better integrate the village community and its formal educational institution for the purpose of village development.

This article proposes the revival of African community education as a means of regaining its benefits for the rural Ghanaian village. What follows is a suggested framework which incorporates the relevant elements of both schooling and indigenous education and, at the same time, integrates education into the community as an inducement for the latter's progress and well-being. It proceeds by briefly outlining the dysfunctions of Ghanaian village schooling. Then the compatible aspects of both schooling and indigenous education are welded together into a new framework or model called "community education-as-an-enterprise."

Failures of the School

The dysfunctions of Western formal education in Africa are well documented by Manuwuike (1978). Other writers have criticized the African school for being a domestication device (Freire 1972), a tool of cultural imperialism (Carnoy 1974), and an agent of colonial domination (Altbach and Kelly 1978). President Nyerere (1967) views the school as fostering the cultural alienation of villagers, while Fafunwa (1973) regards it as a push-factor for rural-urban migration—a phenomenon which siphons the human capital of the village into the city, thereby widening the gap between the two in terms of the distribution of wealth.

Studies which focus on schooling in Ghana confirm many of these assertions. The research findings of Weis (1979, 1981) and Williamson (1979), for example, reveal tendencies toward the reproduction of inequalities through school stratification and the selection mechanisms of schooling. Foster (1965) had earlier reported disparities in rural and urban primary enrollment. From his findings, Blakemore (1975) links early attrition in village schools to parents' frustrations over the lack of returns relative to their sacrifice in sending their children to school. Invariably, some parents withdraw their wards prematurely from school for this reason. And, based on evidence from her own study, Browne (1981) argues the inability of the school to encourage in village pupils the internalization of skills that relate to village production systems. These findings indicate limits to the school's ability both to achieve universal education in Ghana and to contribute to Ghanaian village development.

The school is criticized in other ways too. The high cost of formal education, usually a quarter or more of total government budget allocations, is a source of constant criticism from politicians and bureaucrats. Parents complain over the loss of investment in their unemployed school graduates, while the frustrations of the school leavers themselves become evident as soon as they realize that the high expectations and tastes which they cultivated while in school are unattainable. Because the school is divorced from work, it can also be criticized for making it impossible for learners to earn income, hence aggravating the individual's earnings foregone during the unusually long Ghanaian schooling years. There is also a wide gap between in-school cognitive learning and out-of-school affective and practical learning.

By implication, these basic problems of schooling (curriculum irrelevance, separation of learning from earning, high financial costs, faulty delivery methods, and structural incongruency), which are exacerbated in the village situation in Ghana,

are the results of the isolation of the school from the rest of the village. It follows, then, that for as long as the school is effectively estranged from its host community, it will continue to be unresponsive to the other problematic areas of village life, particularly the latter's social and economic development.

Educationists like Minzey and LeTarte (1979) suggest, within the western educational framework, that this problem of integrating the school into its community so as to create a role for the school in its community's development is achievable through community education. Indeed, the concept of community education, which is examined next, seems to articulate adequately the educational strategies that are important in efforts geared toward regaining the functional benefits of African indigenous community education that once characterized Ghanaian village communities.

Conceptual Perspectives

Both community education and community development, as contemporary educational concepts, originated in Western industrial societies where schooling is often criticized for its role in fostering alienation—a preeminent social characteristic of those Geselleschaft societies (Ashcroft, 1975). The school is considered a dehumanizing institution, an active partner in the creation of urban communities that lack humanistic attributes such as caring, sharing, and self-help. This concern over the alienation of the individual from the community raises doubts about the relevance of the concept of community education in the conceptualization of education in rural Ghanaian villages. For those communities are characterized by strong kin bonds which facilitate a homogeneous community in which caring, sharing, and interdependence are natural attributes. However, these village communities experience their own cultural and environmental alienation of the schooled minority who are often forced by their formal education to abandon the village for the city instead of staying to contribute to its development (Nyerere, 1967). The concept is equally relevant to Ghanaian rural education because it also professes educational relevance (Sinclair, 1980), mobilization for self-help projects, and the active participation of the community in its own education.

Community Education

In their book *Community Education: From Program to Process to Practice,* described by Taylor (1984) as the blueprint of the mainstream community education movement in Western societies, Minzey and LeTarte (1979) consider community education not only as an educational concept but also as a movement, a philosophical concept, a program, and a process. They define community education as:

> a philosophical concept which serves the entire community by providing for all of the educational needs of all its community members. It uses the local school to serve as a catalyst for bringing community resource to bear on community problems in an effort to develop a positive sense of community process toward the end of self-actualization. (p. 12)

Jackson (1980) and Taylor (1983, 1984), among others, have criticized this interpretation of the concept. They question whether community education is really a radical panacea for the solution of the problems associated with the school, or whether it is, in fact, a meliorative device designed to placate the poor through token programs in order to divert attention from the real issues of educational inequalities, inefficiencies, and ineffectiveness. These critics also see community education, when conceptualized this way, as more expressive of the peripheral nature

of the "add-on" extracurricular activities that supplement the formal school curriculum. They further argue that the role expectations of the school do not include enhancing the achievement chances of the underprivileged. In fact, the Minzey and LeTarte definition implies school-centered community education and, although the protagonists of this school-based community education (including Minzey and LeTarte) will dispute it, the interpretation makes community education interchangeable with "community schooling."

Nevertheless, along with other proponents of school-centered community education, Minzey and LeTarte also acknowledge in community education implicit elements of educational relevance, a capacity to engender self-reliance, a propensity to encourage caring and sharing, opportunities for community mobilization for community action, and built-in problem-solving potential in its process. It is these aspects of the concept, rather than its school-centeredness, which are considered in community education as it is conceptualized in this article.

Community education is, therefore, defined here as *an educational process that encourages the utilization of all learning resources within the community (even when there is no school), for the purposes of mobilizing the community's resources for its own development.* The definition reiterates Quainoo's (1955) observation that school generated learning is only part of the total learning that occurs through the network of educational agencies in the village; and it underlies the need to integrate the school into the community system. In addition, the interpretation recognizes the need for a learning model which effectively converts the *school* system to an *education* system (Fantini, 1978). Again, this conceptualization affirms the underlying need, noted by King (1976), to recognize the differences between the social conditions of Western industrialized societies where the concept originated, and those of the developing societies, like Ghana, where a village may not have a school, and where also the educational focus is on functional basic education. Finally, given the adoption of a suitable educational delivery strategy such as Freire's problematization and conscientization which favor a liberating approach to community development, the definition incorporates the capacity of community education to engender community development, a term which is discussed below.

Community Development

The significance of the process of community education lies in its ability to effect qualitative social change in the form of seeking solutions to the community's problems (Minzey & LeTarte, 1979). Fletcher (1980) explains that this qualitative change may be achieved through programs of compensation or positive discrimination by which a community education process may target a social problem such as poverty, alienation, or inequality of educational opportunity and tailor its programs toward the solution of the identified problem.

Armstrong, David, and Doyle (1975) describe this approach, which they perceive as interventionist, as target-centered and they distinguish it from their preferred man-centered alternative approach. In their view, the man-centered approach to community development is essentially an educational process, a view which ties in with community development as an integral part of community education. Community development is seen in this article in that perspective. The term is thus construed as *the processes of a community's self-examination through its education for the purposes of improving its living standards by providing its members with the necessary skills for the utilization and transformation of the*

available resources to its benefit. This meaning discards the notion of intervention suggested by Fletcher and deemphasizes the role of external change agents. The definition instead makes room for education in the efforts to provide for the social advancement and well-being (Ross, 1967) of the village community. Thus, although community development is interpreted here from the Minzey and LeTarte self-help approach, the emphasis is on indigenously stimulated development and not externally induced development.

Community Education for Community Development

Many views on community education for community development have been expressed. Sinclair (1980) emphasized the need to relate the design of basic schooling to the life and work of the wider community. Dove (1980), Watson (1982), and Thompson (1983) see a role for a village community school in rural transformation within social conditions such as those prevailing in rural Ghana. They envision the village school as a rallying point for community mobilization and participation in change efforts that will engender improvements in the social, economic, and health conditions, among others, in the village. Watson (1982, 1983) also argues that there is a specific role for the village school teacher in village education and development.

Writers such as these also note preconditions for the successful translation of these ideas into viable village education and development schemes. One such precondition is the active involvement of the village leadership in the processes of community education for development. Dove (1980) cautions that government and international agency initiated interventionist community education schemes, which are developed without the active participation of the local community leadership, risk failure. The conflict of authority between the school and village institutions described by Roberts (1982) underlines the serious consequences of ignoring village decision and opinion leaders in the planning and implementation of village community education and development schemes. Watson (1983) finds the present restriction of teacher training to the acquisition of methods for imparting literacy and cognitive skills exclusively to village school pupils inadequate preparation for a development inclined teacher. Therefore, he recommends that the prospective village teacher's training be extended to cover community development skills if a leadership role is to be fulfilled. It is important to note, however, Roberts' (1976) assertion that the teacher's leadership role in the Ghanaian village, considered vital to village education and development by Watson, is diminishing with a continuing devaluation of his social status. As important and as apparent as these factors might seem, British colonial attempts at village community education for development in Ghana did not appear to have recognized them.

Colonial Community Education

Mgbemena (1983) contends that British colonial educational policy, which centered around the school, was not particularly enthusiastic about tailoring schooling to suit local needs. Nevertheless, persuaded by the American initiated Phelps-Stokes Reports of 1922 and 1925 on education in Africa (Manuwuike, 1978, pp. 15-16), the colonial administration introduced some kind of "education for the welfare of the community" through programs outlined in policy guidelines such as the *Education Policy in British Tropical Africa* of 1925, the *Memorandum on the Education of African Communities* of 1935, and *Mass Education in African Society* of 1944.

Implemented "symbolically" through extracurricular activities such as cultural drumming and dancing ceremonies, the schemes did not achieve the expected involvement of school leavers in village development. Schooled villagers still flocked out of the village. Neither did the vocationalization of the school curriculum, by introducing subjects like gardening, mitigate the role of the school in alienation and educational irrelevance. For, as Foster (1966) predicted, mere hotch-potch adjustments and disparate uncoordinated changes to curriculum content in the manner of vocationalization were not enough to make schooling more meaningful to Ghanaian village communities.

The failure of British efforts to link school (curriculum) to life in the village attests to the inability of the school to relate to the village and contribute to its development in contemporary times. This is not to say that education (not schooling) cannot play a positive role in village development. The inability of the colonial educational efforts to induce village development only proves the validity of the preconditions referred to earlier and also serves as a guide for future attempts at community education for village development—a search which is the objective of this article.

Informed by the inadequate performance of the British in community education, the search here for a new approach to community education for village development focuses on a less formally structured education that marries school and work, integrates learning and life, is delivered through dialogical discourses, and thus creates an enabling role for education in village development. Indeed, an examination of Ghanaian village conditions, briefly attempted in the ensuing section, would suggest that even a more radical approach to community education induced village community development is necessary.

Characteristics of the Village Community

The village community in Ghana is almost a prototype of the hypothetical Gemeinschaft. It is also close to Bell and Newby's (1971) typology of a small, isolated, homogeneous group of people with a strong sense of group solidarity; but not a nonliterate population in the Ghanaian case because, as Roberts (1976) discovered, every village is guaranteed the presence of some elementary school leavers as a consequence of the massive expansion of schooling facilities in the country since 1951.[1]

More explicitly, the Ghanaian village community today is a geopolitical unit with a group of people living in the same place, with common values and history, bound together by a multiple of economic, social, and kinship ties (strong enough to the point of mechanical solidarity), and many of whom are descendants of people who also lived in that place.[2]

The dominant economic activity in the village is small-scale farming or fishing on an owner-operator basis. All other economically oriented activities, including herbal medicine practice, are part-time off-season supplements to the major income from agriculture.

Politically, the village is a unit in the traditional centripetally organized communal system of an aggregation of villages called a paramountcy. The village is autonomous in its internal politics (Roberts, 1976). It elects its own Chief or *Odikro* who, together with a Council of Elders, constitutes the highest authority in the flat-topped pyramid village political structure.

However, the village authority does not exercise jurisdiction over the school (staff and pupils)—wherever it exists—following its geographical and social isolation deliberately created by the original architects, the missionaries, to prevent "uncivilized" village practices from contaminating the "purity" of the school (Zarembka, 1969).

Education in the Village

The school, where it exists, is only part of the village education system and only one factor among the needs of villagers (Quainoo, 1955). Far from achieving universal literacy, in most cases, a majority of villagers acquire the skills that enable them to participate actively in the village and national economy through the indigenous education system.[3]

Villagers distinguish between *nimdee* (knowledge) and *nyansa* (wisdom). The former refers to skills or hard facts, routine arrangements of facts, and the application of systematic methods to resolve a problem or perform a task, often in conjunction with physical power. This knowledge may be innate, endowed, or deliberately taught and learned, and is universally accessible. Among professionals such as healers, blacksmiths, hunters, and *linguists*, however, *nimdee* is deeper and specialized, requiring extranormal aptitude and methodology in its acquisition.

Nyansa is a rare, higher order, and more complex knowledge. It is partially experiential, but not everyone has the ability and capacity to aspire to achieving it. Although to some extent gerontocratic, it is not necessarily synonymous with age. The skills of *nyansa* are important in adjudication and political decision-making. The typical wise person is the *linguist*, an orator and an authority on the local language and the intermediary in communication between the Chief and his or her audience.

Due to exhaustive investiture rites and procedures, political officeholders are generally deemed wise. There are no institutionalized forms of restricted knowledge or wisdom acquisition. In the formal school systems of Africa inherited from the colonial era, however, this folk wisdom "is conspicuous by its absence" (Adams & Coulibaly, 1985).

Either (*nimdee* or *nyansa*) may be acquired or transmitted through a combination of family, peer group (age grade), *asafo* companies (militia), or story-telling—together constituting the network of community education. Each institution, as outlined by Bentsi-Enchill (1971), is assigned a specific role and function in the child's education and upbringing. Parents pass on the basic skills for economic survival to their offspring who learn through play, imitation, and role-playing.

Age grade or peer group maturation confinement sessions (akin to the school's formality) prepare minors for the challenges of adulthood. The *asafo* company inculcates into boys the ideals of sacrifice, courage, community solidarity, and responsibility. Special lessons in local history, oratory, traditional and customary rites are always given to Chiefs—and Queen Mothers-elect to provide them with the tools for wise counseling and leadership. *Anansesem*, or story-telling, teaches morals. Village assemblies and festivals provide occasions for the exchange of ideas and knowledge in local and extravillage discourses on topics like new farming techniques or genealogies.

It was this elaborate, well organized education system, referred to as indigenous education, that the school came to subvert rather than supplement, complement, or even coexist with. The school has, in fact, thrived on its intrinsic contempt for the

social and cultural institutions of the village, even though this is unnecessary in light of the fact that the two systems have identical objectives of preparing community members for life.

Integrating Indigenous Learning and Schooling

Indigenous modes of learning and schooling are complementary in many respects. Villagers need the techniques of reading, writing, numeracy, and recognition which are essential for calculations and other daily economic activities they indulge in. But these skills, which are basic tools for the acquisition of the highest order of knowledge and are taught by the school, are missing from indigenous African education (Busia, 1964).

Learners, however, equally need their education to be related to their environment in the manner guaranteed by indigenous education, to enable them to control the latter rather than abandon it. Wilson (1963) identifies another of the positive elements of indigenous education, its methodology, which he believes to be essential for the achievement of the powers of memory and learning. McWilliam and Kwamena-Poh (1975) lay partial blame for faulty teaching methods in African classrooms on the teachers' inability to incorporate indigenous methods of remembering and recalling into their teaching strategies. Majasan (1975) is also optimistic about the enhancing capabilities of indigenous delivery methods in contemporary teaching. Adams and Coulibaly (1985) identify positive concepts related to the objectives, methods, and learner characteristics such as active pedagogy, productive pedagogy, and integrated learning from the traditional community-based education in Ivory Coast, Guinea, and Mali which can be borrowed by contemporary African education systems. These examples, although few, indicate a basis for an integrated indigenous and school learning.

The search here is, however, not for a colonial type nominal or symbolic incorporation of a few isolated components of indigenous education into the mechanisms of schooling. It is for a *basic* structure of education that derives from indigenous educational structures and institutions which are community-based rather than from the school. The model of community education that engenders community development to be considered here, therefore, entails a revival of the philosophy, objectives, tasks, methods and the general modality of indigenous Ghanaian education in response to Bentsi-Enchill's (1971) challenge to Ghanaian and African educationists to develop modernized versions of traditional education. In a sense, the model-building may also be considered an attempt at the indigenization of Ghanaian education (Ansu-Kyeremeh, 1985).

The Model

Philosophy for Village Education for Development

Among general thoughts on community-based education considered here are those of Dewey (1976), Freire (1970), and Illich (1971). John Dewey's concern for a functional education that trains the child to respond to the challenges of his environment and participate actively in community effort to meet these challenges is extant in his writings. Of interest here, though, is his stress on the need to relate education to the immediate surroundings of the learner.[4]

Paulo Freire's (1970) view that education must recognize the fact that man as a being of praxis is capable of assessing his environment and reacting to it through action and reflection, in the way of positive utilization of the resources available

within it, is equally relevant to community-based education. Freire believes that the extent of reaction in the above circumstances will usually depend on the degree to which man is aware of his potential. He further posits that the desired awareness is realized through problematization and conscientization from a dialogical method of education that guarantees the active participation of learners in their own education.

Ivan Illich (1971) proposes the disestablishment of the school; a proposal which has been criticized as unrealistic (Dore, 1976). Yet the alternative of "learning webs" Illich suggests as a replacement for the school seems to fit well structurally into the village community education-as-an-enterprise formulated in this article which seeks to redefine the concept of school so that education (general and practical) is made possible in villages without schools.

These ideas are considered together as the philosophical basis for the design of village education that mirrors the structure and ideals of the village and serves the purposes of its community.

Objectives of the Proposed Model

It is from the basic tenets underlying the above philosophies of education that the principal objectives of the community education model under discussion here are derived. The tenets are: That education must relate to the environment and the needs of its clientele;[5] that rigidly structured learning processes are incapable of creating a congenial learning atmosphere within the community typology being dealt with; and that the active participation of the community in the design and implementation of an education scheme for the benefit of its members is of paramount importance. It is discernible from the earlier discussion on the elements of community education and community development that these are necessary ingredients in education designed to elicit development in the autochthon community. The tenets also underline the task for the model which has an overall objective of organizing a learning atmosphere in the village, which makes universal functional education for children by the age of maturity manifestly feasible, while offering opportunities of access to basic education for adults in the short term. Similarly, they express the other objective for the model which is uniting education and work so that learners can simultaneously earn a living.

The proposed model is also designed to transform the community by reshaping the consumption patterns of villagers to accommodate and stimulate patronage for locally produced goods and services. By implication President Nyerere's (1967) idea of education for self-reliance is an equally attractive basis for the model.

Furthermore, any progressive village community education system must aim at reversing the present domination of village life by the concept of school which prevails even in villages without schools. It must equally ensure greater interaction of learners and instructors through a two-way communication flow in which exchange of ideas benefits learners and exposes instructors to the problems of learners.

Also, since the thoughts and actions of people are usually shaped by the social contexts in which they grow up and live, the new approach to the education of villagers must incorporate the coexistence of competitive individualism and cooperative collectivism, a feature of the traditional village community which is atrophying and may probably die if not salvaged soon. The kind of educational structure that will effectively pursue these aims is described next.

Structure of the Model

To achieve the above objectives, the model is loosely structured to allow greater geographical and subject mobility of learners and to offer them the opportunity to try everything on the curriculum. In theory, it is a 22-year program, including a one-year compulsory full-time work period. In practice, however, it is lifelong education and it permits flexibility in advancement from one stage to another. Except for the one-year period of compulsory work, part-time work is required of all full time learners from age 10 until they are ready to work full-time. The deschooling structure is justifiable because, as Foster (1966) notes, the schools will detach children from the rural environment largely irrespective of what they teach.

The structure (see Figure 1) is five-tier with each tier known as a "level." Level One begins at age two and ends at age eight. There are two subsections within the level. The first section, the equivalent of the present nursery and kindergarten, commences with two-year-olds and it is of four years' duration. Play as a learning methodology is emphasized at this stage, and in addition the child is introduced to personal hygiene. At the preparatory stage, the second section of Level One, helping children through reading, writing, and numeracy is the major cognitive activity. Children are also encouraged to accompany their parents on visits to their farms or to other work places to engage in experiential and affective learning. This will help solve the widespread problem of attrition caused by parents' forcible withdrawal of their children from full-time learning so that they may help their parents on their farms (Kabba-Diallo, 1983).

Age eight is the entry point for Level Two education, which takes the child through eight years of study to the first exit point in the system at age 16. Together with Level One, the two Levels constitute the basic and compulsory segment of the community education-as-an-enterprise model. Thus the main preoccupation of village education becomes the ultimate conversion of two-years-olds into literate and educated members of the work force within a period of 14 years. At least four out of the eight-year Level Two education is to be spent by urban born and domiciled children in the village.

By the time the child graduates from Level Two, the expectation is that he or she ought to have gathered enough theoretical knowledge and practical skills to enable him or her to earn a living. The 16-year-old thus proceeds to undertake a mandatory one-year period of work at the end of which he or she has the option to enter tertiary education for specialized learning. Individuals who successfully complete the basic education and opt for Level Three, specialized learning, are automatically guaranteed places in the tertiary institutions. Those staying on in the work force must enroll in a part-time Level Five program. The rationale behind this arrangement is to encourage the affected individuals to keep their minds active, maintain their aptitude for learning, and reduce loss of memory, in case they decide later in life to return to full-time Level Three studies.

For full-time post-Level Two education aspirants, learning resumes at Level Three at the end of the one-year compulsory work. Third Level learning is tailored to the needs of middle level manpower training similar to the semiprofessional preparation presently undertaken by polytechnics and teachers' and nurses' colleges. Despite being the foundation for Level Four academic education, to forestall future dropout problems, all Level Three learners ought, as a matter of policy, to specialize in a vocation. The fact that "learning clusters" or institutions at this level emphasize specific areas of study might compel individuals to relocate geographically. Part-time work, which is built into the entire education system, is particul-

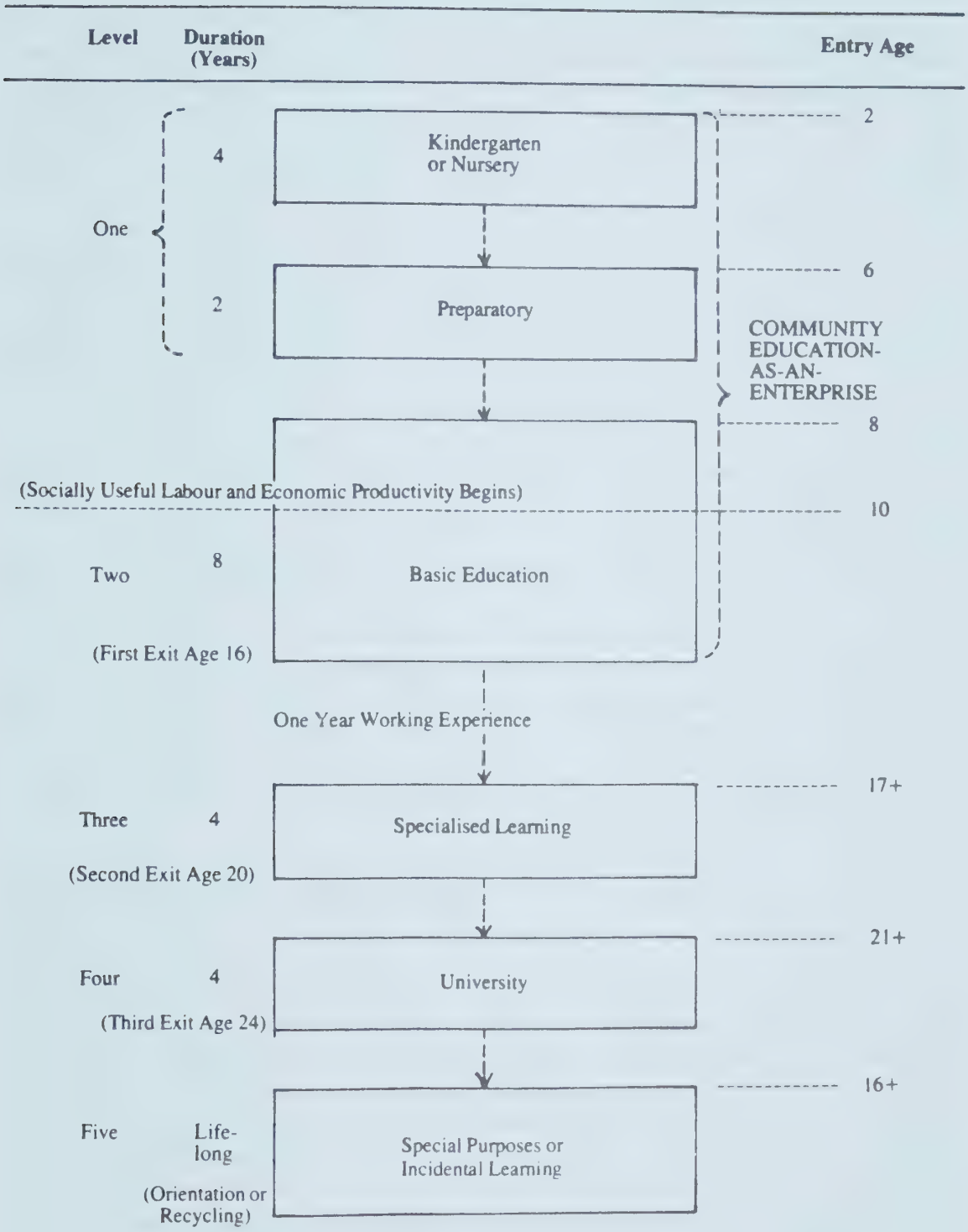

Figure 1: Structure of the Village Community Education-as-an-Enterprise Model

arly important for the practicum or on-the-job learning aspect of the Level Three curriculum.

Evaluation at this juncture, as in earlier cases, will continue to be based on theoretical learning, practical skills, and learner contributions to socially useful work and economically productive ventures (Nyerere, 1967). This will ensure that measurement of competence or attainment is real and corrects the current practice of misrepresenting certificate examinations as selection examinations (Quansah, 1985). Manual labor is considered an inseparable part of the work-study program that the model envisages as a means of inculcating the dignity of menial tasks into every member of the village community and as citizens of an agricultural nation with a labor intensive economy.

The terminal point of Level Three learning coincides with the second exit point in the system. Level Three graduates may, therefore, choose to conclude full-time studies. But some may wish to advance to Level Four academic and professional education, having concurrently been prepared for it at the third level. As in the case of Level Two graduates, those terminating their full-time studies at this point must enroll in Level Five study. For Level Three education, then, the average learner enters at age 17 or older, and completes at age 20 plus. It must be emphasized that all ages stipulated here are approximations because the individual may progress through the various levels freely and in accordance with his or her aptitude for prolonged learning, ability to learn, and degree of motivation.

Officially, full-time study in the proposed system terminates at the end of Level Four. Level Four learning is the equivalent of contemporary university education. Learning tasks at this level are to be restructured to include a work program and an indigenized curriculum that responds more positively to the needs of a nation with a 60% rural population and which relies on its village communities for its political and economic strength. The duration for Level Four education is also four years. The entry age is around 21, while the age of completion is 24 or thereabouts. Mandatory part-time or intrastudy work, to be undertaken in the village, is an essential part of the learning program at this Level.

Learning at Level Five is informal, continuous, and lifelong. Any learner terminating full-time learning at any of the three exit points automatically joins the mandatory Level Five learning activities. These activities, to reflect the informal learning that is encouraged at this Level, are in the form of discussions and debates, and they are undertaken through clubs, workshops, or assemblies. The deployment of urban dwellers to work on village development projects, at least once each year, is a mandatory component of the curriculum; and so is the active participation of village residents in communal labor. The majority of activities, however, focus on personal growth, self-improvement, self-fulfilment, and self-actualization. Discussions on leadership, leadership roles, and national and international issues are also regularly organized.

Essentially then, the program, process, and practice of the proposed education model is a fusion of indigenous education and schooling. It merges the most enriching aspects of formal, nonformal, and informal modes of education. To achieve its expected learning goals, a curriculum of interwoven disciplines is desirable. The elements of this curriculum must complement each other and also have direct relevance to the educational needs of the village communities in particular and the nation at large. This curriculum must incorporate the global dimensions of the learning process as well.

Curriculum

A community-oriented curriculum responsive to the challenges posed by this new model demands a revolutionary and unorthodox approach to curriculum design. Four areas that immediately come to mind as natural components of such a curriculum are: theory (cognitive learning of subjects or disciplines), practicals (experiments, participatory observations, and workshops), economic productivity (work), and voluntary labor (communal labor). The curriculum is so formulated to coordinate and integrate the cognitive and affective aspects of learning, a feature that is missing from today's fragmented modes of learning, especially the type that obtains in rural communities. The economic productivity and voluntary labor constituents of the curriculum are needed to engender community development.

Regarding subject organization, the basic community education stage (Levels One and Two) is concerned with seven area studies of groups of subjects. The seven broad areas are: environmental studies, physical education, mathematics, science, agriculture, crafts and craftwork, and languages. Branches of environmental study include health, economics, culture, geography, society, and technology. Physical education embraces sports, military training, *asafo* (local militia) adventures, and maturation exercises. Elements of the subject of mathematics are numeracy, counting, measurement, reducing figures to writing, gathering and recording statistical data based on local phenomena, and accounting. Mother tongue education is to be given priority. The local language is taught side by side with the English language as a subject, with its grammar, composition, creative writing, poetry, and oratory aspects thoroughly dealt with.

This proposed curriculum outline is only a guideline designed to assist the local community to determine its own. The uniqueness of local village conditions and needs will dictate which components of the curriculum should be emphasized. However, it is important for the adopted curriculum to also reflect Gandhi's view that "there can be no subject or study which cannot be correlated to craft or environment" and that "a teacher who cannot correlate his lesson to craft or environment is useless to school."[6] The composite of a curriculum with traditional and modern inputs will also facilitate the retrieval and preservation of several components of the indigenous culture before they disappear completely.

Methods of Delivery

An unconventional education system must be executed unconventionally to avoid an entanglement of the new with the old. Just as Machoya (1980) found it paradoxical for a deformalizing school to adopt conventional patterns of structured and graded written curriculum, the basic principles underlying the village community education-as-an-enterprise can be lost in the confusion of applying conventional methodology. Delivery strategies that correspond to the quasi-formal education model, with a substantial indigenous structural representation, is more likely to agree and mesh with the new learning and teaching methods that are a blend of retrieved endogenous methodology and flexible modern approaches. The delivery machine is thus built from dialogue, discussion, and inquiry with minimum use of didactic instructional methods.

Unlike the present system, the medium of instruction is the local language of the community for the duration of the basic education (Levels One and Two). During this time, English will be taught as a subject. At Levels Three and Four, English becomes the new medium of instruction. A reversion to the local language occurs at Level Five.

Organization

Underlying the organizational structure of the community education-as-an-enterprise model is the Freirian idea that the participation and control of its own education by the community will awaken the consciousness of its people to their environmental problems and stimulate their solution. Problem-solving is an integral part of its methodology. But, to facilitate the active participation in its education organizationally, a Village Education Conference is to be institutionalized to ensure a community-oriented educational decision-making process (see Figure 2). Representatives of all actors in the new education are to serve on the Conference. These include learners, learner-leaders, local instructors, and district educational representatives. The functions of the Conference are to design the curriculum, recruit learner-leaders, provide the learning infrastructure, and identify and mobilize all the human and material resources within and outside the village for its education and development. The Conference also determines the evaluation criteria in conjunction with national authorities as a measure of giving village education a national dimension to preempt the possible development of xenophobic communities. District, regional, and national levels of the Conference are, to this end, to coordinate the activities of the villages.

Implementation

Education systems are generally not easily amenable to change. Entrenched elite interests which are manifested in school stratification, rigid selection, and stiff entry requirements, are often threatened by radical and revolutionary education reforms of the nature being proposed here. The privileged reject any moves they consider to be capable of neutralizing the advantages enjoyed by their children over their village counterparts and strive to protect their interests and maintain the status quo. In their resistance, they are assured of the support of the civil service bureaucracy which they dominate, conservative academics, and the teachers' union which might consider the new learner-leader concept as a threat to teaching jobs.

Nevertheless, the criticism against the present system, particularly its alleged propensity to reproduce inequalities in the social system (Weis, 1979, 1981), may be interpreted as a latent desire for an alternative education that addresses the inadequacies of schooling. The most disadvantaged under the prevailing system, the rural communities, are the most likely to support the reorganization of education, granting the consent of the local leadership (Dove, 1980). Whether enough public support can be induced to overcome the powerful political, economic, and social forces of the dominant elite and pave the way for the implementation of the proposed model, is another issue.

Events that immediately followed the December 31, 1981 coup d'état point to the feasibility of a radical educational reform. High-ranking government officials attacked the current system of formal education as inefficient and ineffective, often singling out its elitist character for condemnation.[7] The model even finds precedence for some of its aspects in attempts to integrate *kwasafo adwuma* or communal service into the school curriculum in the *New Structure and Content of Education for Ghana* of 1974. Thus, as impractical as the village community education-as-an-enterprise model might seem, the developments noted above are indicators that obstacles confronting its adoption as a national education policy

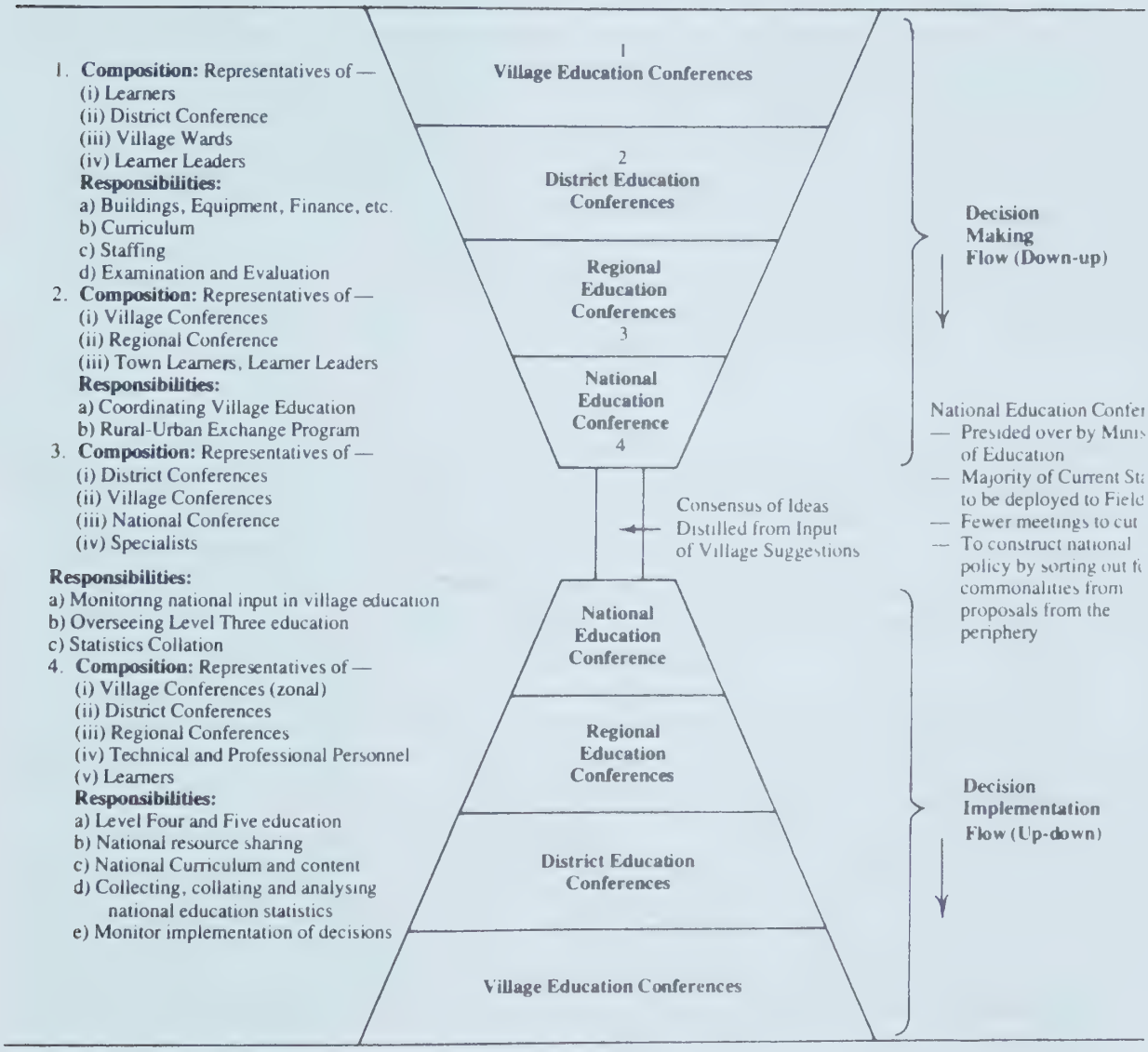

Figure 2: The Inverted Pyramid National Organizational Pattern of the Village Community Education-as-an-Enterprise Model

and system for Ghana are not insurmountable. It must be acknowledged, however, that the extent and strength of vested interests in the present system, as demonstrated in the short-lived and ineffectual nature of the innovations in education attempted by the ruling military government in its incipient months,[8] may impede its ever advancing beyond the conceptualization stage.

On balance, however, the availability of a variety of resources within the rural communities that are favorable to the new model is an incentive in itself for the model's consideration for implementation. Such resources include the presence of knowledgeable elders and skilled artisans, and elementary school graduates who according to Roberts (1976) are present in every village including those villages without their own schools. These people together constitute a potential human resource base for learner-leader (teachers in the new model) roles under the proposed model. Logistical support can also be expected from the school buildings scattered in villages across the country. Regarding funding, villagers are well known for their enthusiasm in contributing either in cash or through communal labor toward the education of their children. In fact, the new model's income generating capacity (arising out of the production aspects of its curriculum) tends to make it self-supporting and in accord with current trends toward budget restraint.

Conclusion

An attempt has been made to highlight some of the well known criticisms against schooling in semitraditional rural communities that have led to a call for its disestablishment. In response, the author has proposed what he considers a more viable alternative education to schooling, one which aims at indigenizing education in order to meet more effectively the educational needs of contemporary rural Ghana. It is believed that should the proposed model, the village community education-as-an-enterprise, win enough support for its implementation, a consistent effort to articulate and manipulate the model is likely to make Ghanaian education more relevant, more productive, cost-saving, and universal. And with its enabling features of a pedagogy of production and its problem-solving approach, it should have a positive impact on village community development.

One needs to stress, however, that the model cannot be a panacea for the complex problems that confront the educational systems of Ghana and other African countries which share the predominant ruralism of the Ghanaian society. Nonetheless, it serves as a reference point for response to the challenge to Ghanaian educators by Bentsi-Enchill (1971, p. 13) to make universal basic education possible by providing modernized versions of education devices developed from the indigenous types.

The exercise may thus be considered an effort at the institutionalization of authentic mass-oriented, common education that creates no outsiders or intellectual orphans (illiterates, neo-literates, and semiliterates) any longer but guarantees both adult and child fee-free basic education.

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Notes

1. One of the immediate actions of the first Ghanaian controlled government, which was elected in 1951, was the introduction of an Accelerated Education Plan, the implementation of which increased school enrollments dramatically within 10 years. For example, during the period, primary school enrollment jumped by 211.9%, secondary and technical schools by 437.8%, and university by 478.8%. See Kwame Nkrumah, (1968), p. 77.
2. Definition in a paper prepared by a Working Group in the Department of Education in Developing Countries, Institute of Education, University of London entitled "The practice of community education in Africa" in Kenneth King, (1976), p. 97.
3. Though formal education has existed for some 400 years, the adult literacy level is between 30% and 40%.
4. See for example, John Dewey, (1916), p. 12.
5. The current head of the military government Flt. Lt. Jerry J. Rawlings is reported to have lamented that: "Ghanaians have become victims to their environment instead of controlling it." *West Africa*, No. 3401, October 11, 1982, p. 2677.
6. Quoted in S.G. Weeks, (1976), p. 2.
7. Opposition to the present educational system has come from highly-placed people such as Mr. Kwamena Ahwoi who is reported to have announced the "Government's intention to abolish private preparatory schools as soon as possible to give equal educational opportunity to children of both rich and poor." *West Africa*, No. 3458, 21 November, 1983, p. 2707. The schools referred to are generally perceived as elitist.
8. Examples of these innovations include an "Education for National Development Plan," which envisaged the establishment of "community secondary schools" to involve students in productive labor; as stated in the article, "New frontier of hope," by Newton Amedofu in *West Africa*, No. 3403, 24 October 1982, pp. 2765-2766.

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Alternative Orientations for Educational Research

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In this article, the authors suggest that educational research continues to be dominated by a particular mode of thought, that of rational empiricism and its adherence to a scientific view of the world. They draw upon the work of Jürgen Habermas (1971) to establish a framework of analysis for their claim. Alternative paradigms of how we view the world are outlined and related to three different inquiry orientations: empirical analytic, situational interpretive, and critically reflective. The nature of educational research as viewed from these different orientations is then described. Finally, an attempt is made to bring forth the notion of complementarity as a means of achieving a fuller understanding of education and research.

This article will focus on the notion of how our world view determines how we perceive educational research. It begins by examining the framework developed by Habermas and how his ideas can be extrapolated into curriculum (Aoki, 1978). The article then tries to show how these ideas can be further developed to reflect various stances toward educational research, and pursues the notion of complementarity.

It is our contention that education, in particular Western education, has been dominated for decades by a particular mode of thought, that of rational empiricism and adherence to a scientific view of the world, which has led to a rather narrow interpretation of education on the part of both teachers and students. There exists, however, the possibility of widening our horizons and going beyond our currently accepted definitions of education. It is this expansion of horizons—this going beyond—which is explored herein.

As a vehicle to help us explore possibilities, we will investigate some of the implications of the ideas of Jürgen Habermas for education. Habermas (1971) suggests that knowledge cannot be separated from human interests, and therefore

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the underlying assumptions which we hold determine how we come to know the world. Because these ways of knowing the world are rooted in all humans' activities of work and interaction (including teaching and learning), it is useful to contemplate the potential which these alternative orientations of person/world relationships offer for deepening our image of schooling and educational research.

Paradigms serve as frameworks within which groups of investigators may work. A paradigm provides the boundaries for inquiries supplying "the group with preferred or permissible analogies and metaphors" for determining what will be accepted as an explanation and as a puzzle solution (Kuhn, 1970, p. 184). In his writings, Patton (1975) provides the following description regarding paradigms:

> Paradigms are normative: they tell the practitioners what to do without the necessity of long existential or epistemological consideration. But it is this aspect of a paradigm that constitutes both its strength and its weakness—its strength in that it makes action possible, its weakness in that the very reason for action is hidden in the unquestioned assumptions of the paradigm. (p. 9)

Kuhn (1970) has described the power of paradigms when he states that "Paradigms may be prior to, more binding, and more complete than any set of rules for research that could be unequivocally abstracted from them" (p. 46).

It becomes apparent that, as educators, it is important for us to uncover these unquestioned assumptions if we are to consider the merits of alternative paradigms. The adherents to a particular paradigm have acquired a particular predisposition to viewing the world which serves to filter out seemingly irrelevant events. Thus a paradigm provides a perspective from which reality is defined, interpreted, and acted upon. A paradigm is much more than a methodological orientation, for it provides an orientation for our relationship with the world, a world view.

Habermas' Tri-Paradigmatic Framework

Habermas (1971) has developed a taxonomic structure which allows us to analyze the logical structure and underlying assumptions of what he has identified as three types of human activity, determined in a large part by the interests of the adherents to the paradigm. If Habermas is accurate in his taxonomic structure, then it becomes obvious that science is not neutral, nor objective, as is commonly believed. Polanyi (1973) has attacked the notion of detached scientific objectivity and has claimed that knowledge is a union of that which is both objective and personal. Scientific knowledge, for Polanyi, is not detached and impersonal, but rests ultimately on belief. The notion of scientific knowledge as impersonal, objective, and neutral is a fallacy. This stance is also supported by Medawar (1969) who claims that innocent, unbiased observation is a myth.

A significant number of educators, in particular those interested in curriculum theorizing, have become increasingly critical of the dominant paradigm in our Western industrialized society, that of strict science with its emphasis on control, certainty, efficiency, precision, predictability, and standardization. It is our contention that curriculum in general has adopted a technical approach to development, implementation, evaluation, and research that has narrowed our view as to what education is. School programs are too often presented as a form of reconstructed logic (Magoon, 1977) which supports an epistemology separating knowledge from the knower, ahistorically and without reference to the social interactions that led to its creation. Later in the article we will elaborate on this point and propose alternative views of education that, if presented to students, should enable them to develop deeper understandings.

Aoki (1978) has taken the three forms of knowledge (called strict science, hermeneutic science, and critical science) based on differing fundamental interests as proposed by Habermas and expanded these into the area of curriculum. His first category, the empirical-analytic inquiry orientation has as its basis the seeking of technical and explanatory knowledge. Power (1976) has labeled this perspective the agricultural-scientific paradigm. Aoki's second orientation is based on a situational-interpretive perspective in which the meanings given by people, in particular contexts, are the focus of attention. In the third orientation, the critically-reflective, underlying interests and assumptions of social action are considered.

Empirical-Analytic Inquiry Orientation

Person/World Relationship

This orientation leads one to approach the world objectively with the primary interest of controlling events and objects. Humans view themselves as entities separate and distinct from their environment with the potential to act upon the world, to transform it, and to explain events with certainty and predictability. It is "without doubt the dominant one [orientation] in education research communities throughout North America" (Aoki, 1978, p. 58).

The dominance of this orientation is well illustrated by Hanson's (1985) classification of the articles published in the *Alberta Journal of Educational Research* over a five year period (1980 to 1984) which revealed that "the majority of articles are quantitative in nature and rooted in positivist epistemologies" (p. 234).

This orientation, or paradigm, attempts to explain how things work and to predict the features of phenomena still to occur. The formulation of laws to make such predictions are dependent upon the identification of relationships (cause and effect) through observation and manipulation of events.

This orientation allows for the study of humans and their natural world independent of the social interests of the researchers or of those researched, since reality is accepted as given and existing apart from humans themselves. Objectivity is assured, as the knowledge gained is based on observation and experimental evidence and is therefore not subject to bias (the neutrality of scientific knowledge).

The technological society in which we live has bestowed on scientific methods, in particular the Baconian notion of induction and logical positivism, and Cartesian rational thought resulting in a hypothetico-deductive approach, the status of being the method for inquiry in a broad spectrum of fields. It is this uncritical acceptance of a way of thought that led Apple (1975) to state that "scientific outlooks have become so ingrained in our consciousness that they have become values, not merely ways of gaining knowledge" (p. 123).

This approach has also led to the separation of theory and practice with the formulation of an hypothesis, as a component of theory, to guide the practice of an investigator who believes that the theory illustrates an ideal state of affairs. The hypothesis can then be subjected to verification, frequently in the form of empirical testing, deducing that if the hypothesis is correct one may be able to predict the occurrence of certain observable events.

Within this orientation there is a great concern for the validity and reliability of the knowledge gained. For this reason, statistical analysis and corroborative empirical evidence are often drawn together.

Educational Research

Within the empirical-analytic orientation, research is viewed as constructing a theory which represents an ideal state of affairs in a classroom and then using this theory to guide practice by predicting the effect of certain teaching behaviors on specific outcomes, for example, achievement. Novak (1979) indicates that the search is for a theory with the potential for "guiding the selection of (science) education events for study, types of assessment measures to use, alternative ways to transform data, and interpretation of relevant knowledge claims" (p. 485).

Once a researcher has achieved an acceptable level of fit (discrepancy model) between the data observed and the categories of theory devised, the problem then becomes a technical one—to work out an efficient method of applying the theory to obtain the ideal state. A major goal of educational research becomes a matter of settling the question of "how the instructional sequences of concepts, skills, and facts should be organized to optimize for a given student his rate of learning" (Suppes, 1974, p. 8).

The researcher within this orientation sees a classroom existing as a set of variables, and by using sophisticated statistical attempts to explain and predict behaviors in terms of these variables. There is concern for both the validity and reliability of the theory employed with corroborative evidence being sought for the former and statistical provisions made for the latter. This emphasis of current educational research exemplifies the technological approach to research which often attempts to find the "best" means to achieve a set of predetermined ends. This empirical-analytic paradigm which has been dominant in educational research for so long led Campbell and Stanley (1963) to state that we must instill into young experimenters the notion that we must "justify experimentation . . . not as a panacea, but rather as the only available route to cumulative progress" (p. 3).

Lowery (1980) supports this notion that (science) education research has been dominated by an empirical-analytic paradigm when he writes that educational research was developed during a time of considerable scientific enterprise with a research paradigm based on the scientific paradigm. Lowery also notes that the effect was to apply methods from the pure sciences to a different area of endeavor, education, which lies within the parameters of social science. Perhaps it is time to recognize that education is concerned with the "world of people" more than with the "world of things."

Situational Interpretive Inquiry Orientation

Person/World Relationships

This orientation views humans as social beings possessing intentionality leading to action (acting upon the world), and giving personal meanings to situations by interpreting events around themselves. Humans are not viewed as separate from their world, as in the empirical-technical orientation, but are viewed as influencing and being influenced by their surroundings. Each individual gives meaning to his or her particular situation, and these meanings may vary from one individual to another according to their interpretations. Aoki (1978) states that while "the human activity of concern within the empirical-analytic orientation is man's productive intellectual capacity to work, the activity of concern for those in the situation-interpretive framework is communication between man and man" (p. 60).

From the situational perspective then, human efforts are directed toward gaining insights into human experience by means of clarifying and making explicit the

meaning of events and activities. Subjective experience of life, of everyday reality, becomes the focus of attention.

Most of the knowledge of the scientific disciplines is socially derived and socially approved by the scientific community. If the usual tradition of research is altered, if the community shifts its ways of knowing, then members of the community must be "reeducated" (Kuhn, 1970, p. 112). In his writing about objective facts, Kuhn states:

> Is sensory experience fixed and neutral? Are theories simply man-made interpretations of given data? The epistemological viewpoint that has most often guided Western philosophy for three centuries dictates an immediate and unequivocal, Yes! In the absence of a developed alternative, I find it impossible to relinquish entirely that viewpoint. Yet it no longer functions effectively, and the attempts to make it do so through the introduction of a neutral language of observations now seems hopeless. (p. 126)

What becomes evident in the situational paradigm is that there exist multiple ways of knowing. Reality is socially constructed and not "out there" waiting to be discovered; it is dependent on the biographical features of an individual and his or her interpretations of events.

Educational Research

Within the situational-interpretive orientation, the major focus of research is to provide meaningful descriptions and interpretations of events and phenomena. Rather than developing a priori theoretical statements for which validation is sought, concepts and interpretive frameworks are only suggested by the researcher and are tentative and subject to change as more powerful concepts or themes emerge. It becomes a major effort of the researcher to make explicit the expectations, attitudes, motives, and common meanings that teachers and students have in specific situations. The researcher "cannot stand aloof as an observer as is done in empirical-analytic research, but must enter into intersubjective dialogue with the people in the research situation" (Aoki, 1978, p. 60-61).

An example of situational-interpretive research is that conducted by Drysdale (1983). His research focused on the kind of meanings students and teachers of high school biology give to their experiences of working in the field during winter months. He used a variety of ethnographic strategies including direct observation, interviewing, transcript analysis, and direct participation to arrive at his interpretations. A conceptual framework using area of being (passive, immediate, responsible, transcendent) following Rothe (1979) was incorporated to help analyze his data and arrive at additional thematic structures. His research lends support to the intuitive, but often unsubstantiated, feelings of worth that most science educators have regarding the importance of laboratory and field work.

Another interesting study was carried out by Oldham (1982). Her work attempted to uncover the meaning of difficulty as experienced by students within the context of high school biology. She states, "In contrast to the predominant curriculum orientation which views difficulty as a phenomenon which can be objectively measured and should be eliminated, this study perceives difficulty as a subjective and meaningful experience" (p. iv). From analysis of observations, interviews, and transcripts she found it possible to determine three levels of meaning for difficulty: The first involved participants' perceptions of difficulty in relation to instructor-directed activities; the second involved closer scrutiny of the phrases used by participants to describe "difficult experiences"; and the third as a mode of "being-in-the-world" which is a possibility that is ever present.

Other examples of interpretive studies are those of Thompson (1984), Boag and Massey (1981), and Pearse (in press). Thompson investigated the professed beliefs and views about mathematics and mathematics teaching of three teachers and tried to determine how their conceptions influenced their conventions and behavior. Boag and Massey conducted a situational study to try and understand two elementary teachers' responses to imposed changes in a social studies curriculum. Pearse examined the notion of what it means to be a student teacher in a teacher education program.

In each of the above studies there exists the notion of trying to uncover the unsaid or the unmentioned to try to arrive at deeper understandings of the meanings participants place on events and happenings which shape our existence.

Critically Reflective Inquiry Orientation

Person/World Relationships

In this orientation, humans are viewed as integral components of their world both acting upon and being influenced by their environment, that is, "in and with the world" (Freire, 1973, p. 4). However, this orientation has a broader base than either the empirical-anlaytic orientation or the situational-interpretive orientation. The former is interested primarily in second-order descriptions of social phenomena while the latter is interested in first-order accounts typifying the meanings actors give to situations in terms of their daily on-going life. The critical orientation is interested in "questioning these descriptive accounts, whether they be second-order or first-order, and in probing for the underlying bases in order to reveal tacitly held intentions and assumptions" (Aoki, 1978, p. 61). This questioning, often referred to as critical reflection, has with it the notion that humans have the potential to change their situations, and the realization of this potential is dependent upon the awakening of their awareness to their situations in order that they may broaden their choices for action. If humans fail to develop their critical capacity for choice of action, they are no longer integrated, but adjusted or adapted to their surroundings, and this condition is symptomatic of their dehumanization (Freire, 1973). Criticism, as a way of knowing that helps free an individual from dependence on taken-for-granted assumptions, becomes a major focus of this orientation.

Self-understanding, however, is more than mere introspection where the inquirer may fall into the ontological "trap of solipsism" (Wagner, 1983, p. 39). Instead, it calls for the inquirer to articulate the links between self-knowledge and the actions of everyday living. Recognition of discrepancies between interests and the existing quality of life must be followed by modification in attitudes and actions in everyday life. This reciprocity between reflective thought and action is often referred to as praxis (Groome, 1980).

The critical perspective calls for an examination of the metaphors employed by participants in any field, as these metaphors can indicate to a large extent the thought processes which determine the kinds of questions asked. In high school biology programs examples of central metaphors are those of repression and regulation, feedback and control. It should not be taken that questions which originate from such metaphors should not be asked, but that the framework and assumptions which give rise to such questions should be identified.

Educational Research

Researchers in education have largely taken for granted educators' problems and accepted the educators' definitions of the problems along with their assumptions and interpretations. If, however, we are to regard education as a social activity where the participants are actively creating reality, we must, as Young (1974) suggests, "bracket out or suspend our belief in the 'givenness' of that-which-scientists-claim-to-know, and indeed that which educators claim to know" (p. 58). What we must be attempting to do is ask, and attempt to answer, questions such as the following:

1. What knowledge is of most worth?
2. Who will decide what knowledge is acceptable?
3. Why do we educate students in various disciplines (i.e., whose interests are being served)?

The critical researcher inquiring into such questions seeks to uncover the assumptions involved in answering these questions rather than examining the mode of presentation in school. Concerns relating to epistemology, power relationships, root metaphors, politics of schooling, and other factors that interplay to construct that phenomenon we know as education need to be examined and exposed so that participants have a clearer view of their situation. Only then can responsible action take place which challenges the traditional notion of school disciplines as being fixed and asocial, whereas in reality they are socially constructed.

A number of studies have recently been conducted which attempt to critically examine different aspects of schooling. Rowell (1983) examined the interactions which constituted the planning for implementation of the International Baccalaureate Program in an urban school district. Her study involved becoming a participant observer in the biology teachers' planning group, interviewing school trustees and administrators, attending workshops and information meetings, and textual analysis. Her framework for analysis consisted of viewing program implementation "as installation, as interpretation, and as reflective action" (p. v). She found a prevalence of technical concerns over situational or reflective ones as the predominant perspective of implementation. Deeper analysis of the data led her to state that "features of the discourse (for planning) are indicative of ideological practice in which the activities and interests of the practitioners are aligned with the concealed interests of dominant social groups upholding the educational institution" (p. v).

In another study, Benson (1984) examined the interpretations of science that were held by grade 12 biology students. Benson participated as an observer in a number of classrooms, interviewed students and teachers, and examined curricular materials to arrive at an understanding of what were the students' interpretations of science and why they held the interpretations they did. The data indicate that school science influences greatly the notion some students have of science (although some of the more astute students were quick to point out the difference between "school science" and "real science") and that teachers and curriculum materials are often presenting a modified Baconian notion of science. As well, teachers frequently use "objective" knowledge as a means of power and control in the classroom.

Hendry (1983) reviewed person/world relationships and their influence on determining environmental values. Her analysis looked at the historical roots of value systems in environmental education and tried to trace the linkage of the taken-for-

granted assumptions that we hold today regarding environmental education. These assumptions need to be examined if we are to avoid the wanton destruction of the environment, as currently seems to be the case. Hendry notes, "It is through the schools, teachers and students, that recognition, awareness, and understanding of environmental values in our man/world relationships will be achieved" (p. 38).

Complementarity

The question now needs to be raised as to whether the various perspectives discussed are mutually exclusive, or if there is some common ground upon which researchers can come together. A number of authors have indicated that there are fundamental epistemological differences between world views and we are not simply looking at differing methodologies. Smith (1983) for example, suggests that the realists' (empirical-analytic) perspective is one which views the world as a subject-object relationship where there is an independent reality, where physical and social scientists have a similar relationship, and where there is a separation of fact and value. Idealists (situational-interpretive and critical), on the other hand, view the world in a subject-subject relationship which rejects the dualism of mind and reality and which intermingles facts and values. How one carries out the process of investigation has serious epistemological considerations. Further, he suggests that rather than "accept the unfounded assumption that the methods are complementary, we must insure that the problem is the subject of serious and extended debate, not only among philosophers, but even more important, among practicing educational researchers" (p. 13).

In a follow-up paper, Smith and Heshusius (1986) continue to emphasize the notion that there is a difference between perspectives (i.e., it is not simply a difference of "methodologies"). They call for a continuation of the debate and state that the attempt to avoid conversation is wrong. Many of the claims for compatability, they suggest, are often related as how-to-do-it (an attempt to quantify qualitative methodologies) and that research is a matter of "what works." Many educational researchers, they claim, have arrived at "the unfortunate conclusion that there are no longer any significant differences between the two perspectives" (p. 10).

A supportive train of thought was put forth by Tuthill and Ashton (1983) who called for an organization of educational communities around educational paradigms, ones that practitioners and researchers can share. In their view, differing paradigms result in unsharable understandings and knowledge. Researchers and practitioners must work together to solve similar paradigmatic problems.

Howe (1985), however, is of the belief that paradigms which call for either qualitative or quantitative research strategies are fundamentally the same and in the final analysis are based on interpretation. To him, the value-free value-laden dichotomy of the positivists is false and combining approaches is on solid epistemological ground.

Smith (1983) as well as Miles and Huberman (1984) would support Howe's ideas calling for combining various approaches. They would acknowledge that there are differences between approaches (perspectives) but that we can get a better notion of what we are investigating if we use a variety of methods.

Olson (1986) also leans in this direction. He indicates that he sees a shifting of knowledge and that hermeneutic (interpretive) science and natural science have come closer together. What is different between them is the objects of study. He claims that their epistemology is similar, as is their methodology, and that logical

positivism (in the traditional sense) is fading. To Olson, the distinction between explanation (natural science) and understanding (interpretive science) is relative and they are probably much "more closely related than has previously been noted" (p. 168).

Holmberg (1982) accepts the notion of empirical and interpretive research and suggests that for purposes of explanation (empirical) and understanding (hermeneutic) the two are complementary in that they are both rational activities. However, he would not agree with a critical stance such as that proposed by Habermas (1971) in that he sees a critical perspective as being too subjective and presenting biased beliefs from a nonneutral starting position. Value judgments are not open to investigation and are therefore irrational and unacceptable as scholarship. He does not, however, help the reader to understand how his claims for rational research (i.e., empirical and interpretive) are indeed value free.

Perhaps the positions taken by Soltis (1984) and Mosenthal (1985) most closely agree with that taken by the authors of this article. Soltis calls for an associated community of researchers where not all researchers do all kinds of research, but do what they do well. Pedagogy, for Soltis, is a basic human activity, extremely complex in nature, which requires a combination of research. It follows then, that "research in education broadly conceived must be empirical, interpretive, normative, and critical" (p. 9).

Mosenthal (1985) writing on the progress of educational research identifies three approaches for carrying out research: one, a literal-normative perspective which has an ideal (i.e., definition) in mind and typically invokes a discrepancy model based on correspondence theory; two, an interpretive perspective in which no ideal exists and definitions represent constructed interpretations of reality; and three, an evaluative perspective in which there are evaluative definitions of progress which have ideological implications of the definition of the phenomenon for the larger society. Each of the definitions of educational progress makes different claims as to how educational research contributes to practice, conceptualizes the theory-practice relationships differently, and focuses differently on the question of how educational research might improve practice. He calls for complementary approaches to what he sees as one of the major problems of educational research, that of partial specification, and states that for educational progress to take place, progress must be made using all three perspectives—literal, interpretive, and critical.

Concluding Comment

It was not our purpose to minimize the importance of any one particular orientation, nor to suggest that there exists, or should exist, a hierarchy regarding the importance of differing paradigms or orientations. As with any categorization or classification system, including the analytic framework developed by Habermas, we are reducing the phenomenon (i.e., educational research) to less than what it is for the purpose of discussion and clarification. In so doing, we have a tendency to view differing orientations in juxtaposition, often perceiving them to be in competition with one another bringing about a tension among scholars in the field, often causing us to build walls between various camps. It is possible, however, to view tension in a positive way as a force which will bring about deeper dialogue among those of us engaged in educational research and help us to form bridges, not walls.

It is hoped that what was presented will help to bring about an awareness of complementarity; that what is needed in education is a multiplicity of views and

orientations along with differing approaches to research. Using a particular framework (paradigm) to guide our thinking not only leads us to certain kinds of outcomes, but also limits the kinds of questions we can ask. If we wish to come to a fuller understanding of the phenomenon known as education, we had best be prepared not only to be tolerant of, but also open to, alternative perspectives, struggling toward the possibility of moving beyond the mere alternatives to a fuller understanding of what education indeed is.

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BOOK REVIEWS

AN INTRODUCTION TO EDUCATIONAL ADMINISTRATION IN CANADA. *By Leslie R. Gue.* Toronto, ON: McGraw-Hill Ryerson, 1985, 274 pp.

It is important to remember that this book is written for students at the undergraduate level—people who, for the first time, will be thinking about educational administration. In terms of the intended audience the book is introductory, but topics in the first chapter, such as a philosophy of administration, administration as a process in context, and phenomenology are issues which seasoned administrators are currently debating.

The author's stated purposes of touching upon the core of educational administration as a foundation for further study and of presenting administration in a positive light are laudatory. Topical issues of human rights and the women's movement, along with the challenge of making the administration of schools more human and more responsive, are introduced early in the first chapter. Few would argue with the central philosophy of the book that administration is always a facilitating process with the emphasis on context. Chapters dealing with administration as a cultural universal, bureaucracies, the organization of education in Canada, organizing schools for effective instruction, teachers and administrators as professionals, and the harmonious school (discipline) are not out of the ordinary. The second last chapter on global, national, provincial and system issues with guidelines for coping with issues, and the last chapter about administration as a positive force, make a more unique contribution to the literature.

The sequence of chapters and the selection of content have caused this reviewer some concern. The chapter on professionalism, for example, is between the chapters on organizing schools and the harmonious school. In the first chapter administrative processes are identified as decision-making, organizing, implementing, planning, coordinating, communicating, and evaluating, yet in the second chapter, it is stated that supervision is part of the process of administration and that teachers are both supervisors and supervisees. Playground supervision and the visits of others in the classroom to supervise are a prominent part of a beginning teacher's life at work and the author does not give the topic the attention it deserves. In the opening chapter "Phenomenology" is as prominent a heading as "Administration: A Process in Context" and has more space than the topic "Teachers as Administrators." A second concern regarding selection of content is the highlighting of bureaucracies in the second chapter at the expense of considering schools at the board level as political systems and at the classroom level as social systems.

A major shortcoming of the book is a lack of consistency. In the foreword to the book it is observed that education is in the political domain. chapter 6 stresses that everyone wants limits, yet in the section on humanizing complex organizations it is stated that, "if the group is free of control or influence from external forces, it is more likely to be successful and productive." One wonders about the justification

for the quoted statement and to suggest that schools, or even classrooms, could, or should, be free of external influences is not consistent with reality nor with other points emphasized elsewhere in the book. A further illustration of lack of consistency is the stated importance of making organizations more human, of fostering creativity, and of seeing administration as a joy, yet the areas selected for emphasis in the appendices are timetabling and a list of 65 questions for consideration when starting in a new school—hardly a creative approach! Why is the model for illustrating the administrative process in context, presented in the first chapter, not utilized as a means of integrating ideas and approaches throughout the book? Rather than the list of questions, consideration of the culture of the school-community as one antecedent from the model would be a reasonable, professional, and challenging approach for a new teacher to follow.

Surprisingly, situational leadership and the literature on effective schools are neglected in the book. School renewal is given one-half page. Contemporary dilemmas such as centralization-decentralization (control-autonomy) are not made explicit and examined in some depth. More alarming in a book on educational administration is the advocacy of a human relations model of leadership. In the second chapter it is said that "good administrators in this generation use consultative rather than directive administrative styles." The fact that strong leadership is characteristic of effective schools, the increasing evidence that teachers' beliefs often change after behavior does, group maturity, and the pleas for tighter coupling of educational organizations are not taken into account. A further comment in the book that good administrators make a conscious attempt to relate warmly to all levels of the hierarchy leads this reviewer to conclude that the human relations level of administration is considered to be the highest level. Most categorizations of leadership have at least an educational and a problem-solving, or a symbolic and a cultural, level beyond human relations. What is even more bewildering is that the author, after advocating a consultative style in early chapters, reports in the fourth chapter that there are few conclusive findings regarding participative decision-making.

Undergraduate students would likely appreciate the emphasis on human beings in this book and the attention given to culture. They would be impressed with topics pertaining to the Keegstra affair, multiculturalism, Third Wave Schools, and current issues such as a curriculum for the future, education of Natives, mainstreaming, and computer-related instruction. They would be perplexed, however, by the conclusion in the opening chapter that both phenomenology and social systems theory have a place, and by a paragraph dealing with quantitative and qualitative methods in research. They would be disappointed at not finding useful guidelines for entering into contracts and at a lack of attention to legal considerations such as negligence. To beginning teachers such topics are a higher priority than details about federal grants or a long discourse on the status of teaching as a profession.

In summary, this book is a useful addition to the literature on educational administration. This reviewer would recommend it as a reference book rather than as a text for undergraduate students.

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MEMORY AND INSTRUCTION. *By David A. Baine.* Englewood Cliffs, NJ: Educational Technology Publications, 1986, 338 pp.

This book is an attempt to bridge the gap between theory and practice in the areas of psychology and education. Explanation of teaching methodologies in relationship to cognitive psychological research findings is long overdue, and is a sign of the increased awareness and education of the regular and specialized classroom teacher. Teachers have used a variety of instructional techniques without really knowing why one method is effective for one student while it does not work for another. Historically, psychologists have investigated aspects of memory function without any transference to the classroom setting. Similarly, educators have devised instructional techniques which are without a theoretical base, and it may well be the role of the educational psychologist to interpret theory into practical application. Dr. Baine devotes chapter 1 to "Memory Models and Research" and Chapters 2 through 12 to instructional application which includes "Mnemonic Strategies," "Cognitive Behavior Modification," "Prose Recall," "Instructional Models and Methods," "Instructional Sequences," and "Pictures and Mnemonics."

Four models of Memory are cursorily described in chapter 1. The multistore Model of Waugh and Norman (1965) and Atkinson and Shiffrin (1968) is described and critiqued with the introduction of the short-term memory/long-term memory debate. The Levels of Processing Model of Craik and Lockhart (1972) is described and the limitations of the model noted. According to Dr. Baine, the "currently popular models of memory are schemas and scripts," which are briefly defined and rather less briefly commented upon. The remainder of the first chapter is a review of procedures typically used in the research of memory functions. Dr. Baine describes this research as basic memory research which is usually conducted in laboratory settings and has little ecological validity. He gives the reader a strong warning not to generalize laboratory findings in memory research to the natural environment because most experimental studies are conducted on college-aged students rather than on children and adolescents.

The three chapters entitled "Mnemonic Strategies" give a comprehensive and cohesive explanation of memory research and its applicability and limitations for instructional techniques. A variety of mnemonic strategies are described which include chunking and categorizing, labeling, visual imagery, and syntactic and semantic encoding. Each strategy is supported by research studies which have been conducted on children of varying ages and intellectual abilities. A summary chart showing the studies reported by age level of subjects and methodology would have been a useful inclusion. The developmental nature of memory and use of mnemonic strategies could have been more clearly defined. However, this reviewer is of the opinion that the three chapters on mnenomic strategies successfully bridge the gap between theory and application in memory research.

In the two chapters dealing with prose recall and comprehension, the author reviews research of narrative and expository prose. The limitations of the methodologies used in this type of research are well outlined. A review of measurement instruments, type of prose, and age of students sampled in the studies indicates little generalizability and comparability between or among studies in this area. There is a detailed description of narrative and expository prose which should prove useful for both educators and researchers. The role of narrative and expository prose in the developmental reading process is explained, together with some

practical examples of instruction. The confusion and contradiction in the area of reading research is evident in the description of studies investigating the effect of script size, passage length, and pictures on comprehension. Unequivocal results will obviously prevail without agreement on a definition of reading comprehension and some replication of measurement instruments and methodologies. The review of studies investigating the effectiveness of underlining and notetaking is informative for both student and teacher. The chapter includes some practical suggestions for aids to recall for learner and teacher.

The five chapters which cover mnemonics and comprehension provide cohesive descriptions of the application of researched techniques. Unfortunately, the chapters entitled "Metamemory," "Cognitive Behavior Modification," and "Generalizations and Maintenance" are weak in review of research and confusing in the discussions of instructional techniques. All these chapters are polemic yet supply no summary, conclusions, or final synopsis.

Chapter 12, "Pictures and Mnemonics," seems misplaced within the organization of the whole book. Instead of being the final chapter it would appear to be more appropriately and logically placed following the early chapters describing mnemonic strategies. "Instructional Models and Methods" impresses as a final chapter because it contains a summary of most of the instructional procedures previously described in the book. This chapter is well organized and clearly explains instructional techniques such as prompting and fading, chaining, structural instruction, and modeling. The following chapter, "Instructional Sequences," provides specific illustrations of procedures mentioned in the previous chapter. Lesson plans outlining instructional directions using readiness signals, recall, review reinforcement, and correction are illustrated using the application of morphographic and phonetic spelling rules. This chapter contains valuable information for the classroom which may have been better placed as an appendix to the main material.

There is no conclusion to "Memory and Instruction." The book ends, as does every chapter, with the description of another study without any attempt to synthesize or summarize. This creates an impression on the reader of having read a review of a long list of studies. Another irritating element of the book is the seemingly indiscriminate use of italics. One assumes that words and phrases the author considers of importance to the reader are italicized. In fact, the use of italics is inconsistent which distracts the reader from comprehension of the text rather than enhancing comprehension. For example, the use of italics to introduce or emphasize terminology such as "free-recall" or "paired associate" is comprehensible, but the italicizing of the the words "difficulty" or "example" within a sentence breaks the reader's concentration and interrupts the text unnecessarily. A glossary of terms would have been a welcome addition to the book and may have helped minimize the terms which required italics.

In his book *Memory and Instruction,* David Baine has provided the reader with some excellent suggestions for instructional techniques. This reviewer is disappointed by the promise of the title to give equal time to memory. The first chapter appears to represent the author's attempt to explain a century of research in the area of memory. It is inadequate and could even be misleading to educators who may feel it is of no consequence to investigate theoretical research after reading that chapter. The two chapters on mnemonics represent one of the most cohesive texts written on the subject of memory and instruction and makes the book well worth reading for educators and psychologists.

As a text for describing instructional techniques I think the book will be useful for undergraduate methodology courses, but as a text on memory and instruction it is incomplete. The book falls short of outlining a theoretical base from which instructional techniques are formed, and consequently does not fulfill the expectations which the title creates. The attempt to meld theory and practice in the field of educational psychology is worthwhile and needs to be pursued. It is regrettable that the attempt is not successful in *Memory and Instruction.*

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CANADA'S COMMUNITY COLLEGES: A CRITICAL ANALYSIS. *By John E. Dennison and Paul Gallagher.* Vancouver, BC: University of British Columbia Press, 1986, 360 pp.

Should every student of higher education in Canada have a copy of this book on his or her shelf? The answer is Yes, but with some reservations. This book would appear to be particularly useful for students being introduced to the study of the organization of postsecondary education. To these readers, the book could be valuable as a survey introduction and serve as an excellent resource document. In particular, the comprehensive bibliography, which includes separate listings of French language sources as well as English language theses, is a valuable compilation. One also might imagine that the book could be useful to members of college organizations, particularly as a document which could orient one to the diversity of Canadian community college settings and institutions.

Canada's Community Colleges, however, is not without shortcomings. It takes a special kind of courage for authors to engage in the daunting task of attempting to record the diversity of Canada's community college scene in a single publication. In many ways, Dennison and Gallagher have produced a document which represents a valuable contribution in terms of survey information, but the complexity of the task they undertake is reflected in the structural weaknesses inherent in their final product.

The book is a perplexing amalgam of commentary and description. Historical, political, operational, and/or financial perspectives of the institutions are often presented without any explicit sense of a systematic thematic development. Occasionally a comparative approach is taken; at other times the authors use isolated illustrative examples. The result is a treatment which is uneven and often superficial. In desperation, the reader looks for a consistent framework of analysis, a coherent guiding vision, or the systematic development of the authors' viewpoint. In the absence of these structural elements, the book tends to become a bland and disjointed description, concluding in a rather unconvincing summary statement. The reader of what promised to be a critical analysis is left with a problem not unlike that faced by a diner partaking of a Chinese dim sum breakfast. One tastes a multitude of dishes but there is little sense of pattern. In the end the diner has little choice but to attempt to bring his or her own order to a sometimes confusing array of tidbits wheeling past. It is not my intent to challenge the veracity of the material included in the book, but after reading one is left with a deep suspicion

that the services of a strong editor might have left us with a document which could have provided greater insight, understanding, and a more focused critique.

Turning to the substance of the book, in introducing their intentions the authors appear to have cast a rather broad net. The main features of their agenda are apparently as follows: To provide the story of how and why colleges were established in Canada; to provide an assessment of what colleges have become; to provide an appraisal of the tests that colleges will face during the next 15 years: and finally, to provide a reappraisal of the role and mission of Canada's colleges. A tall order! In addition, Dennison and Gallagher seem to be intent upon making a case for—if not a national eucational system—at least the development of what they refer to as a "national consciousness." The roots of this desire and the precise nature of a "pan-Canadian consciousness" are not made explicit. But, interestingly, the whole notion seems to become less and less credible as the book develops. I will, however, return to this issue at the conclusion of this review.

Chapter 1, which extends to five pages, is purported to be a discussion of the various influences which have affected Canadian community college development. Notwithstanding the fact that the authors assure us that reviewing this developmental process will be an "adventure into the Canadian consciousness," chapter 1 barely provides the content sufficient to warm to the subject.

The "adventure," however, is resumed in chapter 2. The reader is plunged into a series of province-by-province historical vignettes describing the development of college-like institutions. Interestingly, as chapter 2 develops, each historical vignette abruptly ends before there is a description of recent college operations. We discover later that the descriptions are taken up once again in chapter 4, but this represents a rather odd and unnecessarily disconcerting arrangement of the material.

As the institutional developments are revealed, the structural, operational, and philosophical diversity across provincial settings is really quite breathtaking. At the same time, this diversity tends to leave the reader very confused. The authors provide no introductory description of the characteristics of a community college, nor, as an alternative approach to structuring the material, do they explicitly organize the description around characteristics common to all the institutions they are dealing with. The reader is soon lost in myriad details. One finds oneself asking: How is it possible that this apparent institutional diversity can be classified as a single generic type—a community college?

Curiously, chapter 3 seems to have been inserted to serve the purpose of responding to this concern, but this represents an odd placement of synthesis material. In chapter 3 the authors intercede with what appears to be a textbook list of community college characteristics. They make a weak argument that this particular listing is indeed grounded in the Canadian experience and emerges from their descriptions in the preceding chapter. Never mind that the typology of characteristics clearly does not provide a satisfactory overlay for the diversity of institutional structures and operations which have been presented. They choose to ignore this fact; hence, their assertion remains unconvincing.

The second half of the book is taken up with what appears to be a collection of discrete essays relating to issues which the authors have identified as important to Canadian community colleges. The essays cover such matters as the future, institutional identity, institutional politics, and institutional excellence. Interestingly, Dennison and Gallagher again make very little effort to account for the institution-

al diversity their vignettes revealed in the first segment of the book. Time and again, the issues and organizational elements are discussed as if the college-like institutions are very similar and/or emerge from very similar sociopolitical settings.

It is, of course, clear that such is not the case, and Dennison and Gallagher often acknowledge that there is diversity, yet the discussions are frequently presented as if the institutions are all cut from very similar cloth. Where differences are acknowledged and highlighted, the authors' agenda seems to be to call attention to selected ideas or approaches in order to facilitate institutions in fashioning more homogeneous ways of dealing with their local settings. There seems to be a desire on the part of the authors to see a nationally coordinated system of college education. This orientation returns us to the earlier mentioned notion of a pan-Canadian consciousness.

As suggested, the notion of pan-Canadian consciousness is very weakly drawn by the authors. The idea, however, is apparently driven by a desire for an "improved" national sense of citizenship. The community colleges, through their "common college culture," are seen by Dennison and Gallagher as the institutional vehicles through which this consciousness might be developed.

Aside from the fact that their book does little to convince us that there is a national college culture, the idea of the search for and/or the development of an integrated, pan-Canadian consciousness (the very notion makes one draw back in horror) to my mind represents a wrong-headed, technocratic, utopian ideal. It appears to be an idea built upon the notion that the social and political diversity which is Canada ought to be viewed as somehow being broken and in need of fixing. Cast in different clothing, this idea seems to be the tired old quest for a unifying and largely mythological Canadian identity.

What the authors seem to have chosen to ignore, while invoking their idea of a pan-Canadian consciousness, is the Canadian paradox: Canadian shared consciousness is the very diversity and the differences we observe in our society. This *shared diversity* is reflected in the institutions we create for ourselves. To the extent that diversity exists in our country, it is a national strength. The lack of a pan-Canadian consciousness ought to be seen as a celebration of this mosaic. To the degree that the community colleges in Canada reflect and enrich a locale—with due regard for the larger social context—all Canadians are well served.

Even though Dennison and Gallagher apparently would like us to be more like one another, there obviously is no one best Canadian college model. Dennison and Gallager have not presented convincing arguments that there can or should be clearly defined, national standards of institutional excellence. In fact, the dissonance caused by educators continually running up against a wide variety of institutional experiments in Canadian nonuniversity settings is, to my mind, a very healthy situation. As Canadians, we move to homogenize our college educational experiment at our peril. The first sentence of this book states: "Educational institutions reflect as well as shape their societies." I implore the authors to look again!

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PREPARATION OF MANUSCRIPTS

1. All manuscripts must be typewritten, double spaced, and submitted in triplicate and are not to exceed 25 pages in length.
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3. The author's name and affiliation should appear only on a separate title page to ensure anonymity in the reviewing process; the title of the paper should appear on the first page of the manuscript as a means of identification.
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